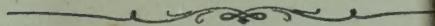


PLANTING OPINION.

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(WITH MARKET SUPPLEMENT)

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INDEX.

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FOR THE YEAR 1897.

GOVERNMENT BOTANICAL GARDEN

LIBRARY.

Section.....

No.....

EXPLANATORY NOTICE.

The Index this year is divided into only four sections, *i.e.*, General, Coffee, Tea and Round the Bungalow, each being alphabetically arranged and carefully cross-indexed. The Index headings are not in every case identical with the headings of the articles or paragraphs, but as the former have been chosen to denote the gist of the articles they refer to, no inconvenience will be felt on that score.

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PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, JANUARY 9, 1897.

[No. 1.

MANAGER'S NOTICE.

Back Numbers Wanted: One each of Nos. 16, 27, 29 and 30, at one rupee per copy, or exchanged as below.

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N.B.—It is particularly requested that the names and addresses of the senders be legibly written on the covers of the papers despatched.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 22nd January 1897.

N. Mysore.

YEDAHALLI.—A few days of rain just before and on Xmas day freshened up young plants but rather interfered with crop operations. Leaf-disease decreasing. General health good. Rice 11 seers, ragi 16 seers. Grain 14 seers. Weather cleared up again and east wind howling.

South Mysore.

GONIBEDE, 4th January.—Crops are very short. I have never known them so short of estimate in all my experience of over 12 years. Crops, like hawkers' prices, can be reduced by one half. When you come to where it is, it isn't there (as the Irishman said). The crop seems to have been only on the surface, which has no doubt misled many, if not all, planters. To make matters worse, leaf-disease has come on like, well, like anything, you know!

Central Travancore.

PEERMAAD, 23rd December 1896.—Weather.—Rainfall for December to date 1.27 inches. Crops.—Tea not flushing much now; land wind very strong and is making the leaf tough and hard. Almost every estate is laying down large nurseries

for next year's clearings and supplying old ones. Labour.—Generally good, though still short on some few estates.

Coorg.

POLLIBETTA.—Weather.—Cloudy and hot but no rain. We have had no cold weather so far; nights warm. Crops.—Picking going on. Some places stripping and commenced pruning. Crops short; London market will be short of East Indian this year. Plant-diseases.—These are picking up again, and the attack of leaf-disease in November going off. General Health.—A slight improvement amongst coolies. It has been a bad season for fever, colds and pneumonia. Labour.—All extra hands will be paid off within the month; just enough being kept on to prune and do any manuring required this time of year.

North Wynaad.

6th December 1896.—Weather.—For first fortnight of December there was only 10 cents of rainfall on one day and drizzling showers on three days. Crops.—Ripening of coffee became a very quick process after the abundant rains, and when the second picking, now proceeding, is finished, there will not be much crops left to gather. Paddy-cultivators have their hands full with harvesting work. Plant-diseases.—Very much less leaf-cast in coffee than at time of last report. General Health.—Good, but some fever about. Grain.—Common rice 10, and ragi 28, large seers per rupee. General Remarks.—A hole has been made in the Karticolam jungle by way of a commencement of the springing into existence of a full-blown estate of 200 acres. A few days since I had a look at last season's planting and am of opinion that, if it continues to jump along as it is now doing, Karticolum will be the show-place of Wynaad for coffee.

Nilgiris.

KOTAGIRI.—Rainfall, 1896, Kotagiri in. 55.21, Kotagiri ghant 41 @ 51, Kodanad 60.27, Orange Valley 50.75. Weather has cleared up since last report. A little more rain up to middle of the month would not be objected to. Crop ripened up in torrents of rain in November and December up to Xmas day. The rush in such inclement weather could not be kept in hand. A good deal is in. A good deal is on the ground on lowlying estates and not

PHELPS & CO., Fashionable Tailors and Costumiers, 16, Old Court House Street, Calcutta. (Ladies' Department: 4, Russell Street.)

much more to come in. Outturn very disappointing and estimates not to be realised. Leaf showing up. Pruning begun on stripped fields. Health good, but cholera at the foot of the hills keeps out influx of coolies. Grain rates unjustifiably high.

PYKARA. 4th January 1897.—*Weather.*—December 15th to 31st rainfall in. 2·70, for the year in. 78·50. During the month weather was moist and foggy and no frost fell. *Crops.*—A good flush all over the estate. *Plant-diseases.*—Nil. *General Health.*—Good. *Labour.*—Plentiful.

SHOLUR.—The year closed with 55·66 inches rain, 3·55 of which fell in December. The weather has been unusually warm since last report, the day temperature in shade between 6 A.M. varying from 50° and 64°. Tea still continues to flush slightly—and as I write prospects of more rain—which will be good for pruned tea and an early start next year if happily it is not nipped by frost. Labour plentiful and prices of grain steady.

COONOR, 8th January.—Weather has now set in clear and cold, and there is more than a suspicion of frost in the air. The rainfall for December totalled 18 inches, against an average of past four years of not quite 6½ inches. Total for year 70·69 in., which is just about an inch above average. Fears of a wet spring may thus be put aside. Lower elevation estates have got in quite half their crops, which, on revised estimates, is coming about up to the mark. Leaf-disease showing up in a nasty way. Generally speaking crops are poor and much under the average, as it seems is general all over South India. Tea has stopped flushing or very nearly so. On the whole the crops of tea in the district have been good and above the average, though the first half of the year was so bad. Labour plentiful, health indifferent. Grain rates about the same but still high, i.e., ragi 18 measures instead of the old 26 measures per rupee.

GENERAL NOTES AND ARTICLES.

Our Planter's Library.

Some changes that we are now making in the management of this branch will, we trust, result in considerable benefits to our readers. Our next issue will contain a considerably longer list of useful books to planters, and will include many scientific works sure to be appreciated by the "New Generation."

Our Index.

With this issue we give our index for Volume I., which we hope will be found of some use to our readers. It is not so elaborate as we could wish, but will doubtless serve for purposes of reference. We shall be glad to register orders for special cloth bound covers for binding, which we shall advertise in our next issue.

Wild dogs.

"Twenty-five of these," writes a correspondent, "have taken up their quarters on N. Hay, Pykara, Nilgiris, and slew three sambur in two days inside the boundary, and I came across nine spotted deer, one jungle sheep in full cry right among my new clearing, going like smoke, but they did not trample down any plant."

Fibre in the Wynaad.

The property at Pundalur (Wynaad), known as the "Mango Range" has been secured, says the *Nilgiri News*, by a Company in England, with the object of being opened out as a Fibre plantation, and Mr. H. Punnett, the Local

Director, is busy making extensive nurseries of "Sansveria Zelanica" for planting out next monsoon.

The Cattle of Mysore.

One of the most interesting of the last batch of *Agricultural Ledger* series forwarded us is entitled "The Cattle of Mysore" and contains a store of valuable information to all interested in the management or breeding of cattle. The official number is Oxen, 1895—No. 24, and it may be purchased from Messrs. Higginbotham and Co., Madras.

A Labour Agent for Ceylon.

We notice that Mr. G. L. Yonge, of the Planters' Agency, Madras, sometime Secretary to the U. P. A., publishes a notice in the Ceylon papers giving the terms and conditions under which he is willing to engage coolies for the Island. It might be worth Mr. Yonge's while to lend his valuable services to South Indian planters. The commission demanded is Rs. 10 per head payable on embarkation.

The fruit market.

Elsewhere a correspondent alludes to the orange industry of Coorg, which province enjoys a notable reputation in the matter of its "loose-jackets." The curious thing is, that with the considerable quantity of fruit available in other districts such as the Nilgiris, no remunerative or even regular market exists. Very little encouragement is wanted to develop a most important fruit-growing industry in all those planting districts within reasonable distance of either a railway or a port.

Effects of Moisture.

According to M. Edmond Gain, the influence of moisture on vegetation varies much at different periods of their growth. Water, as a rule, is greatly needed when the first leaves appear; then little is wanted until just before the blossom shows, when the supply should be copious. The fruit is perfected best in comparative dryness. Moisture in the ground favours increase in the number of fruit, seeds, and roots, but dryness promotes the size and perfection of fruits, seeds, and tubers.

Season Reports.

A subscriber writes as follows:—May I suggest that you ask your Season Reporters to make the reports as far as possible applicable to the whole district for which they correspond, or if this be impossible to attach the name of the estate on which they reside in order that reports may carry just such weight as to which they are entitled.

Our correspondents, we trust, will please take the hint and do what they can in the matter. To obviate any wrong impressions in the future, we are printing the dates of each report, a matter which should have been attended to before.

Malaria.

The U. P. A. S. I. recently suggested to the Government of Madras that an inquiry should be made into the question of the development of the malarial parasite on somewhat similar lines to the investigation undertaken by Surgeon-Major H. Ross and others. After a reference to the Surgeon-General, the Madras Government has decided to address the Government of India on the subject.

This subject was started early last year, it will be remembered.

PHELPS & CO., Calcutta, have probably the largest and best assorted stock of Woollens in India and will be pleased to send patterns and form of self-measurement.

BILLET REGISTER.

ANY subscriber wishing to secure a billet, or desirous of a better one, or in want of a manager, assistant, or writer, &c., is entitled to insert an advertisement to that effect *free* for as long a period as desired. These advertisements will appear on this page. Non-subscribers will be charged the small fee of one rupee.

To be worked in conjunction with the above, we have established a register, and names will be entered on application, together with copies of their testimonials. Thus should any enquiries be made for the services of a manager, assistant, &c., the names and testimonials will at once be forwarded, saving delay and trouble. Subscribers may have their names entered free; others will be charged a fee of one rupee.

BILLETS OFFERED TO**A Surveyor**

Of 25 years' experience, trained in the Imperial Survey Department of India and Engineering College, Roorkee, is prepared to undertake extensive Trigonometrical, Topographical and Engineering Surveys and Levelling and make working plans on the largest scale at somewhat the same rates as the Government Cadastral Surveys which will vary with the area and scale of the survey and amount of detail required.

Full particulars on application to

A. HALL,
C/o Editor.

Field Overseers.

Field Overseers from November 1896 in opening new clearing. Salary Rs. 20 to 25 per mensem. Natives only need apply.

Apply to A. H. SHARP, Esq.,
Devikulam.

Coffee Writer.

Wanted on a Coffee Estate an Under-Writer who understands field work and accounts. Must be young, active, and willing. Must speak and write English well.

A labour connection is necessary. No one without these qualifications need apply. Good salary.

M. A. T., C/o this paper.

BILLETS WANTED BY**By Young Planter.**

Wanted a billet on Coffee Estate by young planter of three years' experience under well-known planters. Excellent testimonials.

"ROCHESTER,"
C/o Editor.

Young Coffee Planter.

Wanted by a young planter, charge of a Coffee Estate. Experienced in all branches. Salary Rs. 200.

"D. D.,"
C/o Manager.

Tea or Fruit.

Wanted an appointment as Manager or First Assistant in tea or fruit. Ten years' practical experience, well up in the cultivation and manufacture of tea, and also in the management of English fruit trees. Bachelor, age 29, active, hard working, sober habits, excellent testimonials and information from the Manager of this paper. Can join at once.

KUMA.

Coffee Planter.

Wanted a situation in Coffee as Superintendent or Manager by a European with over twenty years' experience.

u. c.

Apply D.,
C/o Manager.

Superintendent.

Wanted a billet as Superintendent of a Coffee Estate by a planter of 14 years' experience; testimonials and references given if required.

u. c.

Apply PADDY,
C/o this paper.

Tea Planter.

In 5 to 6 months time by a Managing Proprietor about to sell property, an appointment as Superintendent of a Tea Estate or a large tea house preferred. Mincing Lane and Assam experience. Command of Labour.

Apply T.,
C/o this paper.

Coffee Assistant.

Employment by a young European, aged 24, of steady habits, as an Assistant on a Coffee Estate. Has had experience in this line.

Address

R. A. G.,
C/o Manager, Daily Post Press,
Bangalore.

SHORT ADVERTISEMENTS.**NOTICE.**

THE cost to subscribers of short advertisements is One Rupee for every three insertions of five lines or less. To non-subscribers a charge of Two Rupees will be made.

N. B.—Advertisers should state exactly the number of insertions required, failing this the advertisement will continue running until stopped and will be charged for accordingly.

OFFERED.**Rhea Seed.**

Good available at Rupees Five per ounce. This is the cheapest way of securing plants of this valuable fibre plant.

WILLIAM BROS. & CO.,

u. c.

Heneratgoda, Ceylon.

Sturdy Pony.

FOR SALE.—Handsome bay Persian pony cob, sturdy and well bred, 4 years, 13-3, believed sound. A superb saddle nag, with snaffle mouth, and if trained to harness would make a grand trapper. Price Rs. 500.

Apply "DANDY DICK,"

Three.

C/o Manager of this Paper.

Coffee Estate.

FOR SALE.—A valuable Coffee Estate, in a good district, 100 acres in bearing, 25 young, 55 acres now being opened, 300 acres forest.

Apply EL. L.,

u. c.

C/o Editor.

PHELPS & CO., 15, Old Court House Street, Calcutta, will be glad to send to any address particulars and illustrations of their Riding Habit "Ideal" Riding Breeches, "Acme" Trouser Belt, "Cycling" Scarf, "Muskil" Bow, and "Jemizone" Knot; all patented.

Camera, &c. FOR SALE.—One time and instantaneous Hand Camera, R. R. lens, and complete outfit, almost new.
One 450 bore G. A. Pistol in case with implements.
One large Shikar knife.
One lady's saddle with Scott's patent safety stirrup.
Everything in perfect order.
u. c. Apply "B B B" C/o Manager.

Rifle. FOR SALE.—450 Express, mail canvas case, re-loading and re-sizing Tools and some ammunition. In perfect order.
Apply 303, MANAGER, *Planting Opinion*.
u. c.

Boys' Own Paper. Five Vols. "*Boys' Own Paper*" (1889-94), in good order. Price Rs. 20; offers considered.
u. c. Apply XNAW, C/o EDITOR.

Shevaroy Seed Coffee. Shevaroy Seed Coffee, New Crop, price per bushel Rs. 25 delivered at Salem station. Apply J. C. LARGE, *Cascades, Yercaud*.
One.

A Level. FOR SALE.—A level by Troughton and Simms, in case, with tripod and levelling staves.
Complete and in good order. Price Rs. 300. Open to a reasonable offer.
Five. Apply "AJAX,"
C/o EDITOR, *Planting Opinion*.

THE LABORATORY,
OOTACAMUND,

D. HOOPER, F.C.S., F.I.C., February 20th, 1896.
Quinologist to the Government of Madras.

A. BROWN, Esq.,
Podanur.

Tannery Refuse. This is to certify that I have analysed a sample of "Tannery Refuse," received on the 7th February 1896, and find it to contain

Moisture	...	...	8.80
*Organic matter	...	...	69.84
Lime as carbonate	...	...	9.23
Potash salts	...	...	1.20
Magnesia, &c...	...	...	2.47
Sand	...	...	8.46
			100.00

*Containing nitrogen ... 3.43
[Equal to ammonia ... 4.83]

This analysis of "Tannery Refuse" shows a great improvement on samples called by this name that have passed through my hands. The ammonia is much higher than it was in the last specimen, and the mineral constituents are well distributed. I consider this substance a very useful fertiliser.

D. HOOPER.

Price Rs. 20 per ton delivered in neat bags in Calicut, and slightly cheaper at Mettapalaiyam.
Two.

There are so many cheap imitations of Ellwood's helmets in the market that it is a comfort to know that
PHELPS & CO. keep Ellwood's only.

450 Express for Sale.

D. B. 450 Express by Joseph Lang and Sons, fitted with Lyman and Beach Sights. Price Rs. 350. Apply to
C. W. G. MORRIS, Esq.,
CHAMARAJNAGAR,
Mysore.

One.

To Small Capitalist.

FOR SALE Rs. 6,000.—A newly-built brick Mangalore Tiled Bungalow, in about 50 acres of land, suitable for fruit growing or coffee cultivation under shade. Rainfall 80 inches. Only 3 miles from Taluk Headquarters, Govt. Dispensary and Post and Telegraph Office. A good road leading to bungalow only ½ mile off Government Road.

Apply sharp BUNGALOW, EDITOR, "*Planting Opinion*," Coonoor.

Bangalore Orchard. FOR SALE £500 STERLING.—An orchard in good order within Civil and Military Station, Bangalore, S. India, in a seven-acre block. Water available; containing a nice strongly-built 8-roomed Cottage, with large outhouses and stabling for 3 horses.

Estimated annual rental value £18. Fruit and other crop returns £18 per annum.

Further particulars, apply

ORCHARD,

u. c.

C/o "*Planting Opinion*," Coonoor.

English Home and Education. A lady living at the seaside, in the healthiest part of County Cheshire, with her three daughters, who have had highest certificated education, are willing to receive and educate English children, either boys or girls, any age up to 12 years.

A thorough knowledge of English, French, German, Music, Drawing, Dancing imparted to the pupils.

Young and delicate children most conscientiously looked after.

Terms and particulars on application to

Z. Z., C/o Manager.

u. c.

SOUTH COAST OF ENGLAND.

St. Leonards on Sea, Ancaster House.

English Education.

The Rev. Frank R. Burrows, M.A., Trinity College, Oxford, receives Boys to prepare for Public Schools and Royal Navy. Ages 7 to 14. High and healthy situation, home comforts. Terms 50 to 70 guineas per annum. References kindly permitted to, and particulars to be had from, C. A. Martin, Esq., LL.D., Darjeeling, and Lt.-Col. G. C. Dobbs, I.S.C., Commissary-General, Bengal Command, Naini Tal.

Tea land, &c.

Tea land at high elevation, also coffee land, for sale, or partnership to open. Particulars to

T. C.,

Editor of this Paper

u/c.

bered, by the Nilgiri Planters' Association, and created much senseless amusement at the time.

An old Wynaad Gold Co. Mr. Wright, in his interesting notes on South East Wynaad, which will be found on another page, gives a graphic account of the rise of gold-mining in the district. Curiously enough the last home mail brings us news of the voluntary winding up of the Southern India Alpha Gold Mining Co., started so far back as 1874. Everything had been tried, though it must be confessed in a rather half-hearted way, to prove their Wynaad mines, including the cyanide process for tailings, but all to no purpose. Hence the winding up of the Company. The wonder is, that it was not wound up long ago.

Government purchases of cinchona-bark. Referring to the para. in our last issue *re* the purchase of bark from planters by Government, we learn that as Dr. King has been granted a special allowance in Bengal, a similar allowance is expected to be given the Madras Quinological Department. Certainly it is true that Government and planters will find it mutually advantageous, now that price is so low. But it is a pity that the purchases cannot be conducted by auction, instead of by private treaty, as by the present system there is bound to be a great deal of dissatisfaction felt by those planters who are left out in the cold. It is manifestly impossible for personal visits to be paid to every cinchona estate in South India, and it is unfair, though at present unavoidable, that the more accessible ones should be specially favoured.

Insecticides. A reader sends us the following clipping from the *Indian Agriculturist*, in the hopes that some of the recipes for spraying may be of use to planters:—

1. The extract of 7 lbs. of quassia, obtained by boiling quassia-chips in water, to 100 gallons of water, and 6 lbs. of soft-soap.
2. The extract of 4 lbs. of quassia-chips to 100 gallons of water, with 5 lbs. of soft-soap and 5 pints of paraffin.
3. The extract of 4 lbs. of quassia-chips to 100 gallons of water, with 4 lbs. of soft-soap and 4 pints of carbolic acid, Calvert's No. 5.
4. Six pounds of soft-soap, and 2 lbs. of finely-ground hellebore and a quart of paraffin, boiled and well stirred. This is sufficient for 100 gallons of water.

"Paris Green" is also recommended, with reservation, its poisonous nature being against it. It costs, says the Board, 10d. to 1s. per lb. The paste is to be preferred, 1 lb. of it being mixed with 200 to 280 gallons of water for spraying the trees; but it should not be used when the trees are in blossom.

Price of money. Ceylon is making a fuss just now because a well-known Island planter managed to effect a mortgage in England, on his tea estate, at the rate of five per cent. This, they say, compares exceedingly well with the old coffee days, when the cheapest rates both at home and locally varied from 10 to 8 per cent. But it is nothing so very extraordinary after all, as in more than one case we wot of personally, loans have been raised on *coffee* estates in South India at six per cent., or only just one per cent. dearer than on Ceylon tea. As a matter of fact, the rate of interest depends very largely on the proportion of the loan to the value of the property. A hundred thousand rupee estate would find no difficulty in getting twenty thousand or so at, say, six per cent., while for

every five thousand above that sum, an extra one per cent. would most likely be charged.

A hint.

In replying to the short advertisements published in this paper, we should be obliged if our readers would address their communications direct to the advertisers, so that their letters can be forwarded without trouble or delay. In not a few instances lately, we have been personally asked for details of such and such an article, whether a certain book had coloured plates, or who X. Z. D. might be, who was advertising land for sale, and whether the land was worth anything, and so on. Now it would save the applicants much time, and ourselves much trouble, if they were to address their queries to X. Y. Z., or whatever the initials or *nom de plume* may be, c/o the editor of this paper, when their letters will be forwarded unopened to the advertiser. Most people would think such a course very obvious, but others, as mentioned above, do not.

Bee-keeping simplified. Under the heading of "Bees and the Fertilization of the Coffee Blossom" published in our "Coffee Notes" will be found some interesting directions in starting a country apiary. There are certain obvious precautions to be taken, however, against thieves, both four and two-footed, which can be hit upon at the expenditure of a little ingenuity. Each hive should only cost about four annas, if made of wood, while the return (especially in those estates which either are not kept too clean-weeded, or else have large grass reserves) should run out to about five rupees per annum. If properly extracted, the honey should have a far superior flavour to the usual country mixture of wax and oil, and even higher profits might be realized. By the way, talking of country honey, many a planter's wife could earn a round little sum in pin-money by buying honey and wax from the Kurrumbars and other jungle tribes. The former might be cleaned and sold either locally or in Madras or Bangalore at cheap rates, while the latter could be accumulated till a few cwt. were collected, when it would fetch a good price either in the country or in London. Home prices are about £6 per hundredweight.

Says the *Produce World*:—

Beeswax, bananas and vanilloes. Another item of news to West Indians, which should be exceedingly interesting, is the fact that dealers are advertising what we would consider just fair parcels of *Jamaica Beeswax* at the modest price of 1s. 8d. per lb.—remembering how Colenso used to teach us to calculate, this works out at something in the neighbourhood of £10 per cwt. Now we know for a fact that senders are contenting (?) themselves with something like £8, possibly £8 2s. 6d. per cwt. Someone gets the £2—who is it? Why is it?—and can no remedy be supplied for such a system of trading, which to term "rotten" would be putting it very mildly. In regard to the recent arrival of *Bananas* from the West Indies, and the growing interest which is being taken in banana flour, we took it upon ourselves to submit to Dr. Allinson a sample of this flour which a West Indian correspondent was good enough to submit to us a short time back for our inspection. Dr. Allinson is firmly of opinion that the fruit shipped in the form of flour would be taken up very strongly by the public if once supplies were taken into this port. It would seem that banana flour is very largely used in the West Indies, when mixed with milk, as a substitute for arrowroot, as a remedy in cases of diarrhoea. The sustaining qualities possessed in banana flour are undoubted, and it would without doubt according to the Doctor constitute a most valuable invalids' food. Short length *Vanilloes* are very scarce and

It is not too much to say that PHELPS & CO. are the most popular high-class Tailors in India.

wanted badly in London just now. Mauritius, Bourbon and Fiji shippers would do well to note this state of affairs—now let it be understood when we refer to shippers that we do not refer to the local dealers who collect all the produce they can at the different ports from the little men who are up country, and who have the trouble in the first place of collecting the produce, albeit they are of course kept in sweet ignorance of the state of affairs and prices ruling in the London market, to which port their stock eventually finds its way. Four to 5 inch beans are quoted at 23s. to 27s. per lb., 8 to 9 inch are realising 32s. per lb., and 6 to 7 inch 27s. to 28s. per lb.—the stock of this produce in London up to the time of going to press is somewhat heavier than it was some little time back, but as the prospect of demand seems decidedly healthy, we quite look for prices to be fully maintained.

Vanilla Cultivation and Curing.

In the Seychelles the cultivation of vanilla is proving very profitable, says the *H. & C. Mail*. Mr. Cockburn Stewart, the administrator of the islands, in his report to the Colonial Office, mentions that the flowering of the vanilla during the latter end of 1895 gave a good promise for the crop of 1896, and the expectations then formed are being realised. The crop now being gathered will, it is estimated, reach 30,000lb., and the prices for vanilla this year are exceptionally high. The flowering has already begun this year, and there is every prospect of a large crop for 1897. Seychelles vanilla is now most favourably known on both the London and Paris markets, and commands a remunerative price. Next to coconut oil, it is the most important product of the Seychelles, and in a good year the crop gives a return of about Rs. 40,000. Unfortunately, vanilla is a most capricious plant, and, whereas there may be a good crop for two consecutive years, there may also be a period of three, or even four years without any crop at all.

The *Chemist and Druggist* of Sept. 26 has the following replies to a correspondent:—

E. P. (Fiji).—(1) Curing of Vanilla.—After the pods are plucked they are dipped in boiling water. Next they are packed in hardwood cases, 6 feet long, 4 feet wide, and 2 feet deep. A blanket is first put in the box, then the beans to about the depth of a foot, and a double thickness of blanket on the top of them. The box is then covered with glass, and placed in the sun for a fortnight, during which time the beans ferment, or sweat. Only experience can tell when that process is complete, and the beans are ready for the dry shed. This should be an airy shed, well protected from rain, and not too much exposed to the sun. It should have a series of wire shelves all round it and on the top shelf the beans are placed in single layer, not too crowded. They are turned over every day or second day, and in the course of ten days removed to the second shelf, then to the third, where they remain until they are quite dry and fit for packing.

Cinchona.

The following vigorously written remarks in our contemporary, the *Produce World* (which by the way is now published monthly instead of weekly), will be thoroughly appreciated by many of our readers:—

It is, after all is said and done, you know, only natural that the East India folk should "swear a trifle," when the prices paid here for Cinchona bark crop up as the topic of conversation. And whence comes in the reason for the low rates now ruling? The position of the stocks here is certainly in sellers' favour, being something like 8,000 packages short of what they were a year ago, and at that period buyers were being asked to pay more money than the price at which it is being quoted at to-day. It is really little to be wondered at that the owners of the East Indian estates should be sending home from time to time the loud complaints on the question of prices realized for parcels sold. *Apropos* of Cinchona bark, a

friend was telling us a day or two since, that having occasion for a not altogether retail quantity of this article, he had to pay a fraction under sixpence per pound for quality which we could hardly call good quill. Now please do not lose sight of the fact that the shipper would in all probability receive less than threepence per lb. Where then does the other threepence per lb. go to? We fear there is only one reply to make to this, that it is eaten up by commissions; what a pity it seems to be that the actual consumer cannot have it a little cheaper—and the actual producer receive a little more money than the seemingly idiotic rates quoted by the broker.

Sooner or later, there will be houses cropping up in London, who will be quite willing for a commission to have forward from India parcels of three or four hundred packages of Cinchona Bark from the Indian Estates, with which they will go around and nett for the Consignor the price the consumer is willing to pay, and which we undertake to say will work out better than 3½d.—we will even say 3½d. per lb. for good renewed quill. It may be argued that travelling expenses, postages, and other incidental expenses—necessary to the perfection of this *modus operandi*—will detract too much from the nett price obtained. We, however, contend that there will be plenty of margin left to meet such expenses—in any event one might safely and with confidence calculate on being able to obtain figures which will rank fully fifty per cent. better than 2½d. for crown renewed.

The Indian Tea Association.

From an abstract of the proceedings of a meeting of this Association on the 7th ultimo, we note the following items of general interest:—

The Sub-Committee had before them a letter from the Government of Bengal, Public Works Department, dated 15th October, forwarding papers with details of a scheme for improving and extending the system of roads in the Dooars, the cost of which was roughly estimated at Rs. 8,25,000, and the charges for maintenance at not less than Rs. 65,000 per annum. The matter had been deferred for further consideration, pending communication from the Dooars Planters' Association and others having local knowledge. The Sub-Committee, as far as they could judge, were of opinion that the scheme was a satisfactory and comprehensive one.

Approval was expressed on the proposed agitation for the removal of the tea duty at home.

The Committee noted that Dr. Watt, Reporter on Economic Products to the Government of India, when in London had had interviews with Mr. J. N. Stuart and Mr. A. G. Stanton, in the course of which Dr. Watt had expressed his opinion that insect blight would not seriously affect the life of the tea plant, but that he was much more afraid of the fungus blight which had been seen on tea for some years, and which might at some future time, possibly become virulent, as had happened with coffee in Ceylon. Dr. Watt had also stated that blight was caused by the overworking of the tea plant, and that he had never observed fungus blight on any tea plants in their wild indigenous state. The Committee considered these remarks were well worthy the attention of Planters, and would be quite prepared to take up the question of the appointment of a Scientific Officer, as soon as funds would permit, but it would hardly be possible to raise these while the American Market Fund was continued.

Legumes : a query answered.

It has doubtless struck many of our readers, as a curious anomaly, that, in the case of legumes, you can eat and yet have your cake. That is to say, a field ma

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FOR SALE. A BARGAIN.—A block of 210 acres of good Coffee Land in the Nilgiri District, planted with 20,000 4-year old coffee trees. No difficulty about labour. Grazing plentiful. Manure 1 a. per bushel delivered.

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C/o Editor, P. O.

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FOR SALE.—Block of 1,000 acres, situated in the best district of Wynaad for the early showers; average annual rainfall 80 inches, with an average in January, February and March of over 5 inches.

Government Road from Coast to Mysore bisects the Property which is moreover bounded on the North and West by large rivers, each containing ample power throughout the year to drive Overshot Water Wheels.

The greater portion of the land faces North, North-East, and North-West, with a very easy lay, and the soil is admirably fitted for the growth of Arabica and Liberian Coffee, as well as of Tea. For further details apply to 303, C/o MANAGER, *Planting Opinion*.

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For Sale B. A. Pony "Hankey," about 13-3. Goes in harness and under saddle, but requires to be blind-folded when mounting. A good hard-working animal. Price Rs. 250.

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be sown with, say, peas or horse-gram or other leguminous crop. The crop above ground may be totally removed, and yet the soil will be found to be considerably richer than before. A correspondent alludes to the matter having puzzled him, and evidently has made up his mind that it is absurd. And yet perhaps there is no fact more familiar to the scientific agriculturist of to-day. It is a very simple matter. Leguminous plants derive from the atmosphere, by means of their root-tubercles, large quantities of nitrogen. This nitrogen is stored up in all parts of the plant, roots, leaves, stems and seed. If the three latter are removed as crop, there is still a considerable quantity of nitrogen left in the soil stored up in the roots. It is this root-nitrogen that, in these cases, effects such remarkable improvement in the soil for the benefit of the next crop. If planters were not always in such a desperate and often unreasoning hurry to plant up their land after being felled, a very considerable saving in after expenses might be

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Do do 2½ " "	"	...	17	4	0
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or 218 25" x 19" }	"	...	...	...	...
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Washers (not galvd. old) 7/16", ½", 9/16"	"	...	0	2	6

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Cut Rose Nails 1 in (abt. 525 to the lb.)	per lb.	...	0	3	6
Do 2½ in (" 90 ")	"	...	0	2	6
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Wire Nails, French.

Rs.	12/8	12/0	11/8	10/12	10/8
1 cwt. keg	1½"	2"	2½"	3"	4"
1 pound annas	2½	2½	2½	2	2
Nails 1 lb. (abt.)	200	160	100	80	35

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Rs.	14	8	0	per cwt. Keg.
1" x 13 G.	13	0	0	"
1½" x 11 "	12	8	0	"
2" x 10 "	12	8	0	"
2½" x 10 "	12	8	0	"
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4" x 6 "	11	0	0	"

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12" dia. 2½" tyre	"	...	10	0	0
Axles for ditto length 2 ft. 9 in (incl. tree)	each	...	...	...	...
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Shovels, Round nose, T handle...	per doz.	...	0	2	0
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Hammers, 5, 6, 7, 8, 9, & 10 lbs.	"	...	...	...	...
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affected by judicious cultivation of leguminous crops after clearing. A large quantity of most indifferent land is being planted up every day with either coffee or tea, the success of the clearing depending altogether on the manure supplies. By means of a little forethought the richness of the land could be perhaps quadrupled at very slight expense. After the burn, what would be simpler than to get neighbouring ryots to plough and sow horse-gram or other suitable leguminous crops. The abundant supply of soluble minerals in the ashes of the jungle growth would ensure a most luxuriant crop. The seed crop might be given, in whole or in part, to the ryot in return for his labour, while the straw and roots should be ploughed in to decay in the soil, resulting in an enormous saving in the manure bill for the next few years. True, this would in most cases mean a year's loss in time, though in other cases, where the jungle was "brushy" and an early burn secured, some planting might still be done the same year.

But even in the former case, no real loss of time, which in reality is simply a loss of interest, is incurred if the matter is considered in a business-like manner. The question is merely whether a year's interest, whatever it may be fixed at, is greater or smaller than the saving in manuring expenses effected by the planting of the leguminous crops alluded to. Without the slightest exaggeration, it may be assumed that the green manuring will be worth at least double the money yearly expended on cattle or artificials. Does the interest for one year on the capital exceed this cost, or does it not?

Sisal Hemp Cultivation. In an article in the *New York Times*, Mr. William Drysdale gives some particulars of the sisal hemp ventures, and of the large sums of money they have swallowed up. The writer says those New Yorkers who have lost money in it will not be likely to see anything romantic in the story of sisal hemp. But the others will, and the others are in the majority. With the losers it is a sore subject, for they are small investors, who cannot afford to lose much—small businessmen, clergymen, public school teachers. In every effort to raise this hemp outside of Yucatan, New York has furnished most of the capital, and has always lost it. After reviewing the history of the sisal hemp fever in the United States, the Bahamas, and elsewhere, the writer implies that until some bright Yankee will devise a machine to extract the fibre more cheaply than the slaves of Yucatan can do it, sisal hemp as a speculation for Americans can be classed only with Colonel Sellers's infallible eye-water. In this connection Mr. D. Morris, C.M.G., at the London Institution, on Monday, delivered an interesting illustrated lecture on "Recent Researches in Commercial Fibres." After referring to the great use made of the cotton plant as grown in America, he observed that the raw material obtained from the cotton tree was now attracting considerable attention. The tree was a native of the East Indies, but had been introduced into the western tropics. The floss was first of all exported from Java, immense quantities had been sent to Australia, and the article was well known on the Continent. The tree was very fast-growing, and in Jamaica alone a great trade might be built up out of its products. After describing flax and jute plants, the lecturer went on that Manilla hemp—the product of the wild

banana—was almost entirely grown in the Philippine Islands. Attempts had been made to cultivate it elsewhere, but without success. This description of hemp occupied a commanding position in the market, but good progress had been made with sisal hemp, manufactured from a species of aloe grown in the Bahamas. The trade in China grass and ramie, or rhea, would probably achieve great dimensions, especially as problems on which large sums of money, time, and ingenuity had been expended now seemed to be in a fair way of solution. China grass and ramie were both of the stingless nettle tribe, and after chemical treatment were capable of yielding beautiful textile materials. It was a pity that the two plants were so often confused, and that there was so little knowledge concerning them amongst those who sought to experiment with the fibres. Ramie was a tropical plant, and could well be grown in the West Indies. It might be that its cultivation would materially assist the dwellers in the West Indies in their present predicament, even if it did not entirely take the place of the sugar industry. When the importance of this fibre was recognised they might expect to see manufacturing springing up in the West Indies for its treatment near the place where it was raised. Ramie could be easily propagated in such a climate, and made to yield satisfactory profits.

SKETCHES OF THE PLANTING DISTRICTS OF SOUTH INDIA.

III.

S. E. WYNAAD.

(BY ADOLPHUS ARTHUR WRIGHT.)

(Continued from our last.)

The Chetty.

First is the Chetty; he is the ryot, cultivator of the soil. His customs are more Malabaree and the Maramakatayam; he cultivates rice, ragi, and sammay fields, and gets only one crop in the year, but his habits are lazy. He does not highly cultivate his fields, and seems quite satisfied with whatever the field yields. The Chettis live in hamlets far off from each other, surrounded by their rice fields, and with a few coffee trees around their houses, they are allowed to grow up to any height; and whatever they yield they gather and sell to Moplah merchants. They have their swamy temples near their village, to which they sacrifice goats and fowls. They drink deeply arrack and the sago palm toddy; these trees are also grown by them purposely for the toddy.

The Kurumbar.

The next race of aborigines is the Kurumbar tribe; these men were all gold washers in former years; they dig and wash up auriferous galleys. They work at it from morning to night, and after a week or so they clean up, and pan the gravel containing the alluvial gold. This gold they used to sell to the ryot as a rule—the man who owns the land—the price they used to get for the gold was at the rate of six pies for one paddy grain weight, which calculated came to Rs. 20 for one rupee weight of gold. They sometimes sold the gold to Moplahs who used to supply them with quicksilver. For panning off the alluvial gravel, the Kurumbar uses a hollow wooden dish about two and half feet long and two feet wide, scooped out of a soft kind of a timber. While panning off, a certain quantity of quicksilver is put in the dish, which catches all the fine gold and turns it into amalgam, which is then put on a live coal; the quicksilver evaporates and the gold is left in a lump. In the olden [How about last year?—Ed., P. O.] times, the fall of rain in Wynaad used to be very heavy, and the Kurumbars used to cut water races over hills which they knew to be auriferous. They dug up a space of some two or three hundred yards, and let down the water accumulated in their water races and dams. Sometimes they came across good-sized nuggets.

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I have known a lucky Kurumbar to get a nugget of pure gold worth over one hundred rupees, and which he sold off in pieces at the rate of twenty rupees for *One Rupee* rate. This was the primitive way the Kurumbars used to collect gold, and it is a tedious work. Some of them knew all about auriferous quartz, but they were unable to go to any depth, not having the means to contend with water, and whatever good gold bearing slabs of quartz they could get from their shafts, were burnt in hot fires, ground up finely over a granite rock, and then washed in their wooden dish with the quicksilver. They used to annually destroy large areas of valuable forest by felling and burning it for cultivating ragi, but this has now been put a stop to by Government. From the year 1848, the Kurumbars have gradually discontinued the washing of gold, as they find it pays them better to work on the plantations. They are not only clever with the axe and adze, but also clever in all other works on a coffee estate. Some of them make excellent shikarees. If an adult Kurumbar dies, his remains are cremated, but remains of children are usually buried. Kurumbars live in gangs in their own hamlets, sometimes fifty or a hundred, including their women and children. In the event of a young Kurumbar wanting to take a wife, he has first, through his elders, to get the consent of the girl's parents. First he has to present them with a little money and some cloths (green colour mixed with red is their favourite), and if the parents of the girl are willing, then he has to present his intended with a good cloth, and brass or copper rings for her ears and fingers, (Kurumbars do not wear gold nor silver, but only brass or copper.) After all is ready, the neighbours and elders are all invited, and a grand feast is made with rice (the old fellows taking care to get a supply of arrack for themselves). After all is consumed, then the music and drums go on furiously, the men form a circle round a big fire and dance away to the tune and time of their clarionet and drum until the morning, after which the lucky young fellow with his bride return to his home. The Kurumbar women do not skip like men; they dress themselves neatly, with plenty of saffron applied to their faces. They form a large circle and go round leisurely; they join their two fists and simply make signs with the thumbs which are loaded with brass rings. The women dress very neatly; they use only one cloth, and that goes round a little above their breasts, something like the low neck of a lady's ball dress. There is only one fault in the Kurumbar, and that is, he will never think of going to work until he has eaten all he has saved, and when he finds all his food over, he is obliged to seek work. At the present time the Kurumbar has a little forethought for the morrow; but as a rule, they never turn out to work on a Monday, because on Sunday night they hold a feast and plenty of dancing all night up to morning, and so they are unfit to work on Monday. They work steadily five days in the week, and the lucky planter who possesses a gang of Kurumbars feels happy. One word more for the Kurumbar, and that is, he detests going very close to Canarese or Tamil lines, owing to the filth. A Kurumbar's hamlet is kept clean; they are very particular about this. They are very afraid of cholera and small-pox, and will not approach a coffee estate if they hear of either being present. If any of their own kind are attacked, they all forsake the unfortunate wretch and go far away into the jungle. I had a large gang of Kurumbars in the Devalla district, about one hundred including women and children, in the year 1873. A virulent kind of small-pox broke out in their hamlet, and although they tried their best by deserting those who were ill to die, yet the plague followed them. Some died under rocks and caves, some under trees, and out of my large gang only a dozen or so were spared. This was a sad loss for the estate, of which I was the manager.

The Punnears.

The Punnears were slaves of the Zemindars (large land proprietors) and the Chetties of Wynaad. Their work was to plough the rice fields of their masters, attend to cattle and so on. And after a day's hard labour, they used to get their wages in the evening, not in money, but in kind, and that was two measures of paddy for a man and one measure per woman, nothing more. The poor fellows looked half starved, and it was only during harvest time, and if not watched carefully by their owners, they would steal as much paddy as they could and take it away far into the bush and clean it up for food. The poor Punnear used to be treated severely when found out; besides his daily allowance stopped for a time as punishment for stealing. A coarse cloth is given to the Punnear and his wife on feast days, which happen twice in the year. At the present time the Punnear has

shaken off his bonds of slavery, and lives quite comfortably, as he can always earn his day's wages of four annas on a coffee estate. Anyhow, the Chetty manages with a deal of coaxing and good treatment to get the Punnear to help him to plough his field, and to harvest the same, not being able to use harsh means as in former times. The Punnear well understands the present law that no one can force him to work against his will. They also live in small gangs in hamlets like the Kurumbar. The Punnear also used to dig and wash for gold, but was not so clever at it as the Kurumbar. He is a clever hand with the mamootie in a coffee field, but pruning work could never be knocked into them. During crop time on estates situated close by their villages they often steal coffee at nights, and the planter is put to great annoyance and expense in employing a set of men to watch the field at night. It is only certain thieves who carry on this game; they are not found out; they hide the coffee in the jungle under ground, and after all enquiry, &c., ceases, quietly make over the coffee to their Chetties and cannot be found out, because the Chetty owns coffee trees around his house, and he strips his coffee berries as soon as ever he finds it matured. But of late years, since the Coffee Stealing Act came in force, and by the vigilance of the Police, coffee thieves have become a little scarce. The Punnears have their own swamy under a big tree, and during a feast day they sacrifice fowls or break a cocoanut or so according to their means. The men also dance like the Kurumbar, but their drums and clarionets are much smaller. They do not cremate their dead. The Chetty, the Kurumbar, and the Punnear have two great feasts in the year called Vishoo and Onam; the former happens in the month of April, and the latter in September. The Chetty as a rule must give the Kurumbar and Punnear a good feed that day, and also cheap clothes called "Moondos" in this country valued from four to eight annas a piece. So much about the Punnears.

The Nayakars (Honey Kurumbars.)

The Nayakars (Honey Kurumbars) in former years used to live entirely in the jungles. Their food was honey and wild yam roots, and occasionally a feed of black monkey when netted. They were in a state of almost absolute nudity in the olden times; their only dress being of leaves. At night a firebrand was always held to their chest to keep them warm. They get together under a friendly tree and sleep round a big fire. They collect honey in the following manner. When they find a large tree laden with honey-combs (of this there are sometimes as many as a dozen on a tree), they first tie a long bamboo with its knots perfect as a ladder, this is tied with a strong jungle creeper, close to the girth of the tree, and extends up to the first lateral branch of the tree. This ladder work is done very quietly during day, and at night one of the most daring of the gang climbs up the ladder. He takes with him his torch and his net slung to his shoulder. When he reaches the first branch he gives a song, and after resting a little, he goes on from branch to branch, walking perfectly fearless and cool to the comb—and when he reaches it, he simply points his flaring torch to the bees; he shoves them off quietly with his hand, and takes away the comb without disturbing the bees any further. The Nayakar knows the proper time to take the honey comb; he will always take it when the comb is full with young. After the comb is brought down, they cut it up, roast it a little on fire and then eat it with great relish. They save the wax and sell it to Moplahs who supply them with tobacco. In the year 1848, while my brother Alexander, at the Ouchterlony Valley, was out shikaring in the forest after bison, he suddenly came on a gang of these Nayakars, about a dozen or more, in a state of nudity, quietly enjoying themselves around the fire. The poor fellows got quite powerless and could not move, but my brother got his shikar Kurumbar to speak kindly to them, gave them whatever quantity of tobacco he had, and promised to send them cloths, etc., which he did at once on his return home. In a very short time this gang of Nayakars got quite accustomed to us, and used to come weekly to our stores for rice, salt, etc., and at the present time they have become quite as civilized as the Kurumbar, and work as coolies on some of the estates in the Ouchterlony Valley. The men are also clever with the axe, but not so strong and muscular as the Kurumbar, and now in the Nellakota District there are any number of this race of people working as coolies on coffee estates. The Chetty has a natural fear of the Nayakar, as they believe they can kill a Chetty or even a Kurumbar by some

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tribes.

of their mantrams. These are all the four aboriginal races in South-East Wynaad. None of these four races will touch carrion nor fresh beef. The Kurumbar, the Punnear and Nayakar will however eat bison flesh, as in their opinion bison are not cattle. There are four more tribes in South-East Wynaad who have migrated from their native country; these are, first, the Badagas from Nilgiris: they are chiefly rice cultivators and own large herds of cattle; they have taken up the habits, etc., of the Malabaree; they hold the same Vishoo and Onam feasts, and they also have their Gowree and Passarah feasts. Some of the poorer men go to the coffee plantations for work; they eat flesh, but not beef. Then comes the "Jaderchetty" (weaver caste) migrated in years gone by from their native country, Salem. These also cultivate rice fields in a small way. They have their own village, a few coffee trees around their houses, and also possess a few cattle. They have no weaving industry, and those in poor circumstances go on the coffee plantations for work. There are also a few families of Todas who have migrated from Ootacamund. They possess large herds of buffaloes, and sell ghee in large quantities, with which money they buy food. They never work as coolies, nor do they cultivate. The next race settled in South-East Wynaad and near Goodalur are the Koturs. Some twenty or thirty families migrated years and years ago from Kotagiri. They are a very filthy race of people; they will eat carrion. The men mostly do blacksmith's work, such as billhooks, axes, grass knives, and hoes for the ryot. Some of them possess cattle (buffaloes) and they also cultivate coffee like the Chetty. The women are clever potters in their own way. They make and supply a large quantity of earthenware to all the other natives in South-East Wynaad. The men and women wear one single cloth like the Todas. If any death happens among Todas in the Nilgiris, these Koturs go up for the funeral ceremony with their drums and long trumpets, and of course have a good feed of the flesh of the buffaloes sacrificed by the Todas. During the early days of the Ouchterlony Valley, and in the time of crop and scarcity of labour, we used to employ the Kotur gang (young men, women, and boys) to pick coffee, at which work they were pretty smart and earned money. Mostly all the men are good looking, the women very pretty mostly, but they are a dirty lot. The men are very useful now to the native merchants about Goodalur, as they are clever in building katcha houses and sheds. South-East Wynaad at the present time is thickly populated with all castes and creeds of people. It is to be hoped that in a few years it will turn out a big tea planting district, as there are thousands of acres of good land to be got. And it is a known fact, that tea in Wynaad will grow luxuriantly; witness "New Hope," the extensive tea garden in the Ouchterlony Valley. There is also an estate at Pundalur opened by Mr. Punnett; there is one on the Glenrock Valley opened by Mr. Minchin in the year 1886-87, and the one opened by Mr. W. Ryan at Dewalla, and also there is one now being opened out on a large scale, the Chambally estate, near Goodalur, by a planter from Ceylon. Before the demarcation of land by Government, there used to be serious rows and fights between planters about their respective boundaries. Things were very wild and lawless in the old days, and coolies used to be drilled into shape in ways unknown to the modern generation. This is now all changed.

The old coffee carriers: Brinjari.

I shall now write something about the manner coffee crop was transported to the coast for curing and shipment. We had no road for carts, but only old Tippoo Sahib's steep road. We had to get the Brinjari to take it down on their pack bullocks either direct to Calicut, or about half way to the backwater, a place called Mombat, and another Areacode, and from there sent down in boats to the coast; it used to cost from four to five annas per bushel of parchment. The crop from Cherrumbatty District was sent direct to the coast via Sultan's Battery and Tambracherry. Since cart roads have been made by Government, the planter has no difficulty now in obtaining carts, which take the crop direct to the coast. In olden days, when crop was taken down on pack bullocks by Brinjari, they had great difficulty on the steep parts of the old ghaut; sometimes a restive bullock would bolt down and tumble down a precipice, coffee and all. The poor Brinjari and his wife had very tiresome work until they got to the foot of the ghaut. He always carries his breakfast in his large cowry bag hung round his

shoulder, and also his rude kind of hookah, with tobacco and bhang, and the chakmik flint, steel and cotton. The men wear tight drawers, with a tail behind in which hang cowries prettily stitched by their women. The women wear thick red petticoats and jackets and nicely adorned with cowries. The front of the hair is nicely plaited and cowries attached to it; the back hair is made into one big knot. The Brinjari woman always covers one half of her head at the back, the jacket covers the whole figure from neck to waist; the head, a mixture of red and white, with red tassels mixed with the favourite cowries, and also beads made of porcelain or lead. Some of the men generally wear a silver armlet, and the women brass anklets. The late Alfred Wright prepared and shipped several seasons' crop from the Ouchterlony Valley, and in the year 1855 he obtained a plot of land for Mr. Ouchterlony in Beypoor, and on which now stands the coffee works of the valley. The other estates crops, from the valley, Goodalur, Dewalla, Pundalur, and Cherrambaddee were sent down to the works of Messrs. Parry & Co., Arbuthnot & Co., Pierce Leslie & Co., and Andrews & Co., and also to Messrs. A. Maylor & Co.'s works for preparation

Famine.

during my long residence in Wynaad, I have seen two famines, namely one in the year 1866-67 and the other in 1877-78; the former was not so severe, but the one of 1877-78 was a very bad one indeed, and I found many a poor cooly dying or dead on the road. It was somewhat of a help to the Kurumbar, Punnears and Nayakars that a large area of bamboo seeded in the Nellakota District, and these poor people used to live under the bamboo clusters, collect the seed and eat it. Bamboo seed is rather unwholesome food, as it brings on dysentery. I have seen poor Canarese and Tamil coolies, their women and starved children actually wrench off the bitter wild brinjalls and eat them. Many planters with help from Government had relief works, and food houses made, and so saved many from untimely death. The famine extended to Mysore Province, from which source grain used to be brought to Wynaad, and it was with great difficulty merchants of Goodalur and Dewalla could get the grain merchants to sell. Famine-stricken highway robbers infested the roads between Goodalur and Angalun (the village this side of Goondelpett), in fact it was a severe famine for nearly two years. Several branch roads were opened out by Government as relief works.

The landlords.

There are three principal landholders in the district. One, the largest landholder, and very wealthy he is, is the Nilambur Trimulpand Rajah. He owns thousands of acres in the district,—namely, the Ouchterlony Valley, Goodalur, Teppacandoo, the Naduvattam Ghaut Valley, the Moyar Valley, the Dewalla, the Nardghanie Valley and a good deal in Nellakota District and Moodumullay. He has several thousands of acres of dry land leased to planters, and the wet land to ryots. His revenue yearly from the Wynaad is large; he has agents employed to collect the rents, and carry out all his affairs. He has also a big kovil beyond Goodalur, in which a Brahmin resides permanently, poojay done, and food cooked and given to the Brahmins and Nairs who may go there. The next big landowner in South-East Wynaad is the Wandur Namboodripad; this gentleman resides in Wandur, and employs an agent in Wynaad to collect rents from the planters and ryots, to whom land is leased out in the Nellakota and Nellyalom district; he has also a large kovil, called the "Punnanee Ambollom," in which also a Brahmin resides permanently. The Namboodripad may visit this Ambollom once in a year. The third landowner, Jenmee, is the Nellyalom Arasugal; this rajah is of the Lingayat caste from Mysore Province. At present he holds over twelve thousand acres or so, and a large area leased out to planters and ryots. The Jenmabogum rent charged by these Zemindars is from one to two rupees per acre for forest and scrub and eight annas per acre for grass land and for the paddy flats. The lessee has to pay besides this the assessment to Government. Some thirty years ago, the Chetty (ryots) made themselves out as land proprietors, and leased out land to planters, but this was put a stop to by Government in the year 1864. All such lands and also several blocks of land which were formerly held by the two Zemindars herein mentioned, namely, the Wandur Namboodripad and Nellyam Arasu, have been escheated to Government, as no satisfactory title could be produced by them before the Revenue Settlement Officer, when the revenue settlement took place twelve years ago.

It is so well-known now that Messrs. PHELPS & CO.'s prices, notwithstanding that they are considered high, are so much below those of London, that their trade is advancing by leaps and bounds.

Rhea and other fibres. In the year 1885-86, Mr. J. W. Minchin, the general manager then for the Glenrock Gold Mining Company, opened out extensively the rhea plantation in the Glenrock Valley, and got the Fibre Machinery, etc., from England. In a couple of years the rhea plant grew rapidly, and the first crop of stems were cut and put through the machine, etc., but in the third year, caterpillars of a dark color, in length fully four inches, came into the rhea field in such enormous numbers, that it was quite impossible to check them. Although Mr. Minchin tried every possible means he could, it was of no avail, and the rhea plantations were destroyed. Mr. Minchin also got several other fibres done on the works by the same machine, namely, the wild Rhea, the Plantain, the Nettle, the Ureana and the Furcroya Gigantea. The first were found wild in Glenrock Valley, but could not be got in large enough quantity to make it pay. The Nettle and Ureana fibre were very good indeed, the wild Plantain and wild Rhea not very strong. The Furcroya Gigantea grown in the Glenrock Valley grew vigorously and gave leaves of great length, but the fibre very rough, though very strong. This plant will grow without any trouble or expense after it is once put into the ground. No caterpillars could eat it. No cattle could go near it on account of its sharp thorns. Mr. Minchin has also grown and tried the green aloes (very common in India), but none of all these indigenous fibres could equal rhea. Mr. Minchin also tried the Morva through the fibre machine, which answered well; but this kind of plant is only found on the slopes of Nilgiris towards Coimbatore and the Anamalais, I am told. I have however seen it growing at the foot of Coonoor ghaut. There is the wild Pepper, Cardamom, Ginger, Saffron, the Betel (Pansuparee) Creeper, the Areca Nut, Nux Vomica, Galnut, and several other varieties, and there is also the Rattan Creeper, which grows to an enormous length, and from three inches in thickness down to a fourth or even one-eighth of an inch.

Natural History.

The valuable timber growing in the forests are: The White and Red Cedar, Jack, Black wood (Rose wood), the Hyenee, Benteak, Vengay (Gunkin), the Iron-wood and the Poon, and at the foot of Glenrock Valley there is Ebony, Poon, Benteak, and Vengay are generally used for buildings. Iron-wood keeps very long under ground, and the white ant (very destructive in Wynaad) cannot eat it at all. There are also lofty growing Dammer trees in the forest. The Nayakars collect this gum by marking the stems with an axe, they also collect the cardamom, ginger, saffron, etc., and sell it to the petty Moplah merchants. First, there are several kinds of snakes, namely, the Rock snake, Yemmay Murdall (python), which I have seen of enormous length, varying from six feet up to twenty feet, and from four inches up to twelve inches in thickness. My brother Alexander shot one of enormous length and thickness. Then there is the Cobra, length from two and half feet up to over nine (! Ed.) feet. Then there is the Carpet snake called Mundell by the aborigines, the length which is from two to three feet; the head is big, large mouth, and the fangs projecting; the centre of its body is the thickest, and abruptly tapering off to the tail, which is much like the tail of a rat. The bite of this snake is most venomous, and if not immediately attended to, the patient spits blood, gets unconscious, and dies in a few hours. There are other species of snake in Wynaad, the Green snake and other varieties which are not venomous. The Green snake grows to a length of six or seven feet, a long sharp pointed mouth, opens wide, sharp gray eyes; it generally climbs up tall bushes in search of small birds or tree toads. I have watched this very often; the little birds get quite stupid and flutter about very close to the snake, and it immediately pounces on the bird which is swallowed whole by the snake. The Python or Rock snake generally lays himself near the borders of streams and swampy places, where the small species of deer may come to, which of course is caught and crushed and swallowed in the same manner as is done by the Boa constrictor. I have not known to my knowledge of men being killed by the Rock snake in Wynaad. Then there are huge blue scorpions in Wynaad; these are found generally in cool places and under rocks; the sting of this is not venomous. When opening out a road in Wynaad, one of my Kurumbars was stung; he felt no pain, but only a slight swelling on the stung part, and heavy perspiration, and after a good chew of pansuparee and a quid of tobacco, he felt all right. Then there is

the Centipede. It is of a dark red colour, and fully from six to twelve inches in length and thick in proportion. There is also the Tarantula, which is of a good size. I have not noticed any cases of men stung by these. I have seen good size Cameleon lizard, and also the inghuana, found very often in the border of rivers, and varying in length from two and half feet up to five feet from head to tip of tail. The real "jungle tribes" of the Wynaad are very much the same as those in other parts of the Western Ghats, and are too numerous to mention. Of fish one of the best (from the eating point of view) is the eel, which grows up to two and three feet. Elephant, bison, tigers, panthers, bears etc., etc., are very abundant. Elephants are most plentiful down near Nilambur. Tigers are generally killed by being netted and speared, which work is mostly done by the Kurumbars and Punnears. In the old days Government used to give rewards of thirty rupees a head for shooting elephants, and many a splendid tusker have I brought down in company with my brother. Now of course there is no elephant shooting allowed at all. But what grand times we used to have in days of auld lang syne! And dangerous times some of them were. A Mr. Hinton once was caught by the tail of his coat by a charging elephant and only escaped by falling into a pit. Another man got smashed up entirely in the Teriot, and another, a Lieut. Wedderburn, got served up in a similar was in the Teppecadoo. One day in the Ouchterlony Valley forests, and up the Sentinel Rock Valley, where the "Hope" Estate now stands, my brother and I shot down three elephants in a herd, one tusker and two cows. One of the cows had a very young calf, but as soon as ever the mother was down, another cow elephant carried away the young calf. It was on this memorable day that I got the shikari to milk the dead cow elephant and tasted the milk which, though a little sweetish, is strong and sticky. The Hope Estate therefore goes by the name of "Ammaykauddoo" by the natives up to this time. It takes several weeks for the carcass of an elephant to rot and decay, in fact three months. All kinds of beasts such as the jackal, cheetahs and vulture feast for days and days on the carcass.

In the year 1873, when I was over at Nellakota on a visit to Mr. Caleb Vigor, the owner then of the famous Sussex Estate, I met a Mr. George Withers, a Gold Miner out from Australia, at Mr. Vigor's.

Gold Mining.

During the course of our conversation, the Gold mining came out. Mr. Vigor (who also was formerly a Gold Miner in Australia) told Withers this: "Why man, come over to the Dewalla side and I will show you auriferous quartz reefs." Mr. R. V. Capps, who is now one of the settlers in Kolar Whitefield, also accompanied Messrs. Vigor and Withers the next morning, and went over to the foot of Strathearn estate (since known as the Dewalla Mayar and found certain auriferous reefs, with the quartz showing gold visible to the naked eye. These gentlemen were satisfied and returned to Mr. Vigor's estate. After this I invited Mr. Withers to the "Perseverance Estate," my residence in Dewalla, and took him over to see the extensive number of shafts by the sides of the well known "Shoobemallay" mountain. These shafts were made by the ancient miners called "Vadars" (this race of people are quite extinct now). The shafts are sometimes of a depth of a little over one hundred feet. The mouth of the shafts were round and about four to six feet in diameter, and situated very close to each other with connection or drives from one to another. Mr. Withers got several of these shafts cleaned out, and found the reefs on which the ancient worked. He brought up some splendid-looking quartz showing visible gold. Mr. Withers remained in my bungalow and got on with the prospecting for several weeks. All this happened about the end of the year 1873. About the beginning of 1874 there was a rumour that some of my Kurumbars (who were working for me for several years on the Perseverance Estate) had come across a rich quartz reef in the direction of Nardghannu (since called the Alpha), and that they were getting a quantity of gold. Myself and Mr. Withers visited the spot at once and found it to be a fact. We got a shaft sunk, and before getting to a depth of twenty feet, the reef was found running south to north, and dipping east. The quartz out of the third level or section of the reef was very rich. Myself and Mr. Withers informed this at once to our friends Messrs. J. W. Minchin, Vigor, Capps, Edward Atkins, Fletcher and J. W. Ryan. We formed a small company between ourselves. Some of us went down to Nilambur, saw the Raja Trimu

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Touching a shipment of Indigenous Tea seed, an experienced Indian Planter writes us from Madura District dating 24th June 1896: "Just received the Tea seed; it has arrived in perfect condition, notwithstanding unnecessary delay in transit, and does you credit. Please book me for five maunds as early next May as possible."

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WILLIAM,
Viâ Colombo, Heneratgoda, Ceylon.

J. P. WILLIAM AND BROS.,
TROPICAL SEED MERCHANTS,
HENERATGODA, CEYLON.

MARK TWAIN.

CALCUTTA, *February 8th, 1896.*

MESSRS. CHILD & CO.

SIRS,

This is the brand I wanted. I have smoked your Honey Dew Mixed in another part of the world, and learned to prefer it.

Truly yours,
S. L. CLEMENS.

Child & Co's Honey Dew Mixture is prepared in Liverpool from the four finest growths in the world, viz.:—Sun-dried Virginia (sweet and mellow), Old Kentucky (full flavoured), Turkey Dubec (mild), Latakia (fragrant). All finely matured in bond, and judiciously blended.

It is a faultless Pipe Tobacco, being of medium strength, with delicious flavour.
The finest that can be made. No equal. In $\frac{1}{4}$ lb. air-tight tins ...Rs. 2-8 per lb.

CHILD & CO., *Tobacconists,*
CALCUTTA.

BANGALORE WOOLLEN, COTTON AND SILK MILLS COMPANY,

"LIMITED."

Good and cheap Cotton Banians, plain white or colored, all colors, suitable for maistries and laborers on Coffee, Tea and other Estates.

PRICE LIST OF COTTON BANIANs.

SIZE OF CHEST.	18	20	22	24	26	28	30	32	34	36	38	40	42
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Thick Plain Long Sleeve, per doz. ...	2/-	2/8	3/2	3/4	3/10	4/6	5/4	5/12	6/14	7/4	7/8	7/14	8/4
" " 1/2 " " ...	1/14	2/6	2/12	3-2	3/4	3/12	5/-	5/10	6/2	6/8	7/6	7/12	8/-
Thin " 1/2 " " ...	...	...	...	...	...	...	3/8	4/-	4/8	4/12	5/-	5/8	5/12
2/2 Rib Long Sleeve " ...	...	...	...	...	...	...	...	4/6	4/12	5/12	6/10	6/14	7/2
2/2 " 1/2 " " ...	...	...	...	...	...	...	...	4/4	4/10	5/10	6/4	6/10	6/14
3/3 " Long " " ...	...	...	...	...	...	...	...	...	...	7/6	9/-	9/4	9/8
3/3 " 1/2 " " ...	...	...	...	...	...	...	...	...	...	7/4	8/12	9/-	9/4

TERMS.—Cash with order, or by Value Payable Post.

Apply to the AGENTS,

BANGALORE,

or to THE MANAGER,

BINNY'S COFFEE WORKS,

BANGALORE.

paud and got him to lease to us some two hundred acres at a very low rent yearly. We set to work, and prospected this reef, which we named "Wright's Level" and another very wide reef on the same run north, naming it "Skull" reef. (We called this the "Skull" because we found many bleached skeletons near.) This skull reef was not rich, but it always gave at the rate of *Three Dwt.* of gold per ton of quartz. When all arrangements were completed, we made it known to the public, and we formed it into a Gold Mining Co. (Limited) on a capital of one lakh of rupees in *one £* (or ten rupee) shares, which were all immediately taken up in India, the promoters having accepted one half of the capital in shares, so that only one half was reserved for working expenses. We named it the "Alpha Gold Mining Co., Limited." About the year 1875 we got out a small crushing mill of fifteen stamp head from Australia (Melbourne) and also a Mechanical Engineer to have the battery erected. At the beginning of this year our chief man, Mr. Withers, left the Alpha sick. We, the remaining pioneers, were left in a nice fix. And all we could do was to collect the quartz, whatever it was, from the surface and brought it down to the battery which was being erected. We knew nothing of quartz mining, and our partner, Mr. Caleb Vigor, only an Alluvial Miner in Australia, could not help us. However, with much trouble, etc., the battery was erected, and about the month of August 1875 (after the christening ceremony of the engine) the crushing began. Mr. Binny, the Mechanical Engineer, did as much as he knew in the shape of laying the sodium quicksilver, etc., on the plates and ripples, etc. After a fortnight's crushing we got him to clean up, and the result was not as good as we expected (our partner, the late Mr. Fletcher, also knew something about gold washing, but he too was an Alluvial Miner in Australia in the early days there). At this poor show of gold we were much disappointed. About that time a Mr. Rosscrow came up from Bangalore and said that he was an experienced miner and so on, but he knew nothing and made matters worse. Another man, named Harris, advertised in the Bombay papers that he was an experienced gold miner and amalgamator and so on. We got out this individual from Bombay, but in a short time, to our disgust, he made matters still worse. We, the pioneers, made a great mistake in forming such a small Company, and with only 50,000 rupees left as working capital, the funds came to an end, and the works had to be closed. I must say that at the beginning of our prospecting the quartz, the country was visited by the geologist Mr. King, whose remarks were very favourable indeed, but the mistake was the small capital. However, as I said, all works were stopped on the "Alpha" for nearly two years. In the meanwhile Mr. Minchin formed another small Company between himself and some of his planter friends, calling it the "Wynaad Gold Prospecting Company." Mr. Minchin got machinery set up on a small scale on the Nardaghannie, or eastern side of the Alpha, as next door neighbour. He got up a set of pneumatic stamps and worked it for some time (this property was subsequently transferred to the Glasgow Indian Mines Co.). Mr. Minchin took great interest in the establishment of the gold industry. He got up old records from the Government Office in Malabar, in which there was a long history of gold industry in Wynaad. The Government employed a certain Lieut. Nicholson with a party of Sappers and Miners to work the "Shoolleemullay" mines left by the ancient miners, the "Vadars." As I stated, the works of the Alpha were at a standstill for nearly two years. But in the year 1877, our mining friend Withers returned after having been tired out in the plains where he went to. We at once formed a small Company between ourselves, namely, myself, Messrs. Vigor, Edward Atkins, Williams, J. W. Ryan and Withers, and we named our Company as the "Tribute Company." We appointed our partner, Mr. Williams, as the Honorary Secretary, and Mr. Withers as our Mines Manager (Mr. Minchin still going on with his Prospecting Company, and also giving us every help). We applied to Messrs. Parry & Co. to let us the Alpha or Tribute for one year, binding ourselves to pay twelve per cent. on the gold realized from the mines. Myself, Messrs. Vigor and J. W. Ryan were appointed as the Directors. We set to work at once, got out two Engine Drivers from Ootacamund, one named Wilson and the other Mr. William Barnard (at present Proprietor of the Transit and Livery Stables in Ootacamund). Mr. Withers set to work hard at real mining, and got out rich payable quartz from the "Wright's Level." Our blasting process was done with blasting powder and fuse, as no dynamite

was in existence in those days. Splendid show of gold in quartz taken out from the third layer of the reef at about fifty feet in depth from surface. We had to put the battery and boiler in order; we had to buy quicksilver and sodium and some other chemicals at a high price, and we had to do many things to get into working order. Our first crushing was small and only for one month, and we got enough of free gold to pay the working, etc., expense. But the second crushing of three months was very good indeed; the rumour flew abroad wonderfully quick. Sir Andrew Clarke with his staff visited the mines and mills and was highly pleased with what he had seen. A grand breakfast was given (with the kindly help of Mr. Minchin and mostly at his expense) in the Mill House shed, and there were many visitors that day, in fact, visitors almost daily, and the Directors supplied freely all that was required in the way of refreshments. The late Mr. Ferguson, proprietor of the Ceylon paper, with his two sons also visited the "Alpha." The good old gentleman bought some of the gold, and also some rich specimens of quartz, which he took away with him. When we cleaned up our second crushing, it was grand. We expended about a thousand rupees as working expenses during the three months, and we obtained over Three Thousand Rupees worth of free gold. After all this show of gold to the public, we "Tributers" stopped. This ended in the year 1878, and for one year again the Alpha mines lay idle. The Governor at that time, the Duke of Buckingham and Chandos, visited the Alpha while the Minister of Mines, the late Mr. Brough Smythe and his able miner from Australia were inspecting and reporting about the auriferous reefs in the district. We had a grand breakfast at the Provident Estate Stores, and there were many planters who came over and enjoyed themselves. Mr. Brough Smythe's report on the various quartz reefs in the country was not only elaborate but very interesting. In the year 1877 the gold fever came on strongly. Mr. Charles Royal Dawson bought up a lot of our Alpha gold at the rate of Rupees Fifty per ounce, and also with rich specimens of quartz and with copy of Mr. Brough Smythe's report started off to London, and he formed the first Company there on a large capital of one hundred thousand shares of £1 each, naming it "The South-East Wynaad Gold Mining Co., Ltd." He transferred the Richmond, the Needle Rock, and the Bolingbroke estates, a vast extensive property, receiving for himself one half of the capital in shares and money, leaving the other half for working expenses. He brought out a mining engineer, a mining captain, three Cornish miners one carpenter and one European blacksmith, all on high salaries, and with an agreement to serve the Company for two years, and he himself as manager also on high salary. The Glasgow Bank also formed a Company, and bought up Mr. Minchin's Prospecting Co. works and lands, and eventually took up the Alpha also on case. The Company was named "The Indian Gold Mines Co., Ltd.," then several companies formed sharp one after another, namely, The Perseverance, The Devalla Central, The Indian Consolidated, The Devalla Moyar, The Trevelyan, the Dingleydel, The Glenrock and the Cherrambaddee and the Provident Company. All these Companies got out expensive staffs from London on high salaries. They bought up lands from planters at a very high figure, which swallowed up one half of the capital. With the other half they set to work and made the saddest mistake by getting up all kinds of machinery in the first instance. Erecting expensive buildings and neglecting the first work of prospecting the reef and the mining, they kept scratching the surface and digging about all over the country, and their only ambition was to erect the mills and to crush the quartz which, being got mostly from the surface, gave poor results. This way of working could not continue very long; all their capital came to an end, and all works had to be closed, leaving the Devalla, the Pundalur, and Cherrembaddee districts a desolate wreck. The once beautiful coffee estates which these companies had bought up for gold mining, are all now a desolate ruin. The enterprising people in England, seeing Mr. Brough Smythe's report, bought up shares at once: and this seemed to them that simply the quartz had to go through the mill and tons of gold got, but they were mistaken. Mr. Brough Smythe's report was very favourable of course, but in it he never advised that the mining industry should be done in this extravagant foolish manner, and the capital expended in so short a time. At any rate, the original owners of lands in Devalla,

It has been remarked several times that no doubt PHELPS & CO. will raise their prices, now that they have taken their Ladies' Department to 4, Russell Street, but it is a mistake.

Pundalur, and Cherrembaddee districts did a very profitable business, as they got a high figure from the Company, who were so eager and hasty to get the lands at any price. The Nilambur Rajah made a great deal in rents. As in the years 1874 to 1880, his charge was at the first fifty rupees per acre for mining, but from the year 1880 it went up to as high as two thousand rupees per acre for mining land. Such is the brief history of the gold enterprise of South-East Wynaad. It began gloriously, and within ten years ended disastrously. Many a poor shareholder in London lost his hard-earned money, and this auriferous part of the Wynaad is condemned as having no payable reefs. The aborigines (Kurumbars) who took so much trouble in pointing out the reefs in forests were quite ignored by the Mining Managers. These Kurumbars would have made excellent miners, with only one Cornish Timber Man in each Company to supervise the mining and timbering of shafts and tunnels, and I shall end at last by emphatically saying that we the pioneers of the gold industry have been cruelly disappointed. We laid out thousands of rupees of our own money at the beginning with the hopes that South-East Wynaad would be a flourishing gold mining district, but our hopes were blasted, and the defunct Companies could never again be resuscitated. The country is now deserted. The defunct Companies, most of them, have relinquished their lands to the Zemindars, Jenmees. The Glenrock Company are still holding out, not in any way mining, but retaining their lands. And I say that if this Company does make another attempt in mining, and carry on the same economically, they will yet do well in course of time. But they seem to be quiet, although it is now over six years that they have stopped all works. The auriferous quartz in this country is intermixed very much with pyrites, which contains most of the gold, and as at the present time there is a way of extracting the gold from this metal, I am of opinion that another attempt made in mining will turn out profitable.

If commonsense precautions are taken in building the bungalow on breezy hill tops, very little danger is there of catching "Wynaad Fever," especially if the means allow of planters being able to visit Ootacamund in the hot months of March, April and May, the idle season on estates. Of course some estates are all flat, and in these cases the manager has to take his chance. Before vaccination was practised the ryots used to suffer dreadfully from small-pox, but now the attacks are a great deal milder. There is very little cholera, and still less typhoid or enteric fever.

(To be concluded in our next.)

A WORD OF FAREWELL.

WE make no excuse whatever for reproducing in full the valedictory article of the *Madras Mail* on the departure of its Assistant Editor, Mr. Stopford, for Northern India. It is with very real regret that we ourselves bid him farewell, for a truer and abler friend to the Planting Industry of South India it would not be possible to find. It is difficult to exaggerate the benefits he has conferred on the planting community, a community of which he was once an able and popular member. We trust, however, that the traditions he has left in the *Mail* office will be powerful enough to support that journal in its able and unswerving championship of our interests.

Good luck go with you, "Francis . Ford," and may your rewards be as great as your deserts!

While partings are common enough in India in official circles it is but rarely that the Staff of a newspaper permanently loses one of its number; yet at this Christmas season we are undergoing the deprivation of the professional assistance and the society of a member of our Staff, in the departure to a new sphere of journalistic

work in Northern India of Mr. Francis Powys Stopford, who for upwards of three years has filled the office of Assistant Editor of the *Madras Mail*, and has on more than one occasion occupied for varying periods the editorial chair. We take the opportunity of publicly bidding him farewell, for a particular section of the community, ever increasing in importance, viz., the Planters of Southern India, have expressed a wish to place on record their hearty appreciation of the manner in which Mr. Stopford has, as a journalist, brought their needs and their deserts prominently to notice. The planting industry is of enormous importance to the country, but there is no disguising the fact that it is only of recent years, and then chiefly through the strenuous exertions of the Press, that this fact has come to be generally recognised in a practical manner, greatly to the advantage of the planting community. There still remains much to be done if planters are to be placed on an equal footing as regards law and justice with the members of communities more in touch with and more under the immediate eye of the Government and its officers. It was some six years ago that Mr. Stopford, who had come out to India as a coffee planter, forsook planting for journalism and joined the Staff of the *Madras Times*, then under the editorship of Mr. Harry Ormerod, who has recently been appointed Secretary to the United Planters' Association of Southern India. With a ripe experience of planting matters Mr. Stopford soon began to show in print under what disabilities the community laboured, and when he subsequently came to us we welcomed the addition to our Staff of a writer who had acquired a deal of wisdom born of experience. Planting matters have always received a fair share of attention in our columns and many valuable discussions have taken place therein amongst planters themselves. The efforts of Mr. Stopford since he joined the Press in a professional capacity have no doubt acted as a powerful lever, and planters have little reason now to complain of non-recognition or disregard of their interests. One of the leading planters writes in the following appreciative strain of the efforts on their behalf of Madras journalism in general and of Mr. Stopford in particular. Mr. Stopford is transferring his services to the *Civil and Military Gazette*, and in bidding him farewell we cordially echo the expressions of good will uttered by "A Planter" in the following note:—

"I am sure if it were generally known in planting circles that Mr. Stopford is vacating his appointment on the Staff of *Madras Mail* and is leaving the Presidency, it would be a general wish that he should not do so without some recognition of the good work he has done for the planting community in giving so much attention to planting affairs in the columns of the *Madras Mail*. Great changes have taken place during the past few years in all affairs concerning the Planting Industry. Its importance has been recognised first by the Government of Madras—and through them by the Government of India. Grievances from which Planters have suffered for years have at last been thoroughly ventilated, and they have a representative on the Legislative Council through whom they have ready access to the ear of Government. There is firmly established a United Planters' Association of Southern India notwithstanding that only a very few years ago it was thought impossible to hope for such unity of action. In every way planting affairs are in a sounder and more satisfactory state than they were and good work is being done in every direction by District Associations as well as by the U. P. A. No small portion of the success that has attended all these steps towards improvement is due to the interest your journal has evinced in all planting matters—in emphasising the necessity for legislative reforms—and the importance of the industry, in urging the establishment of a central association and in giving space for correspondence on all points. Friendly criticism, all the more valuable because it has been fair and unprejudiced, has also acted as a guide, and stimulant, to the leading members of the Planting Community who have been entrusted by the Planters of the various Districts with the management of their affairs. Without in any way wishing to imply that Mr. Stopford is the only member of the staff who takes an active interest in planting matters, we cannot but feel that in him we are losing a good and true friend, and in bidding him farewell and wishing him good luck in the new sphere of work to which he is passing, no better medium of doing so can be chosen than the columns of the journal where his name and his writings are so well-known."

Ladies in the mofussil do not always realize that they can by corresponding with PHELPS & CO. at their Ladies Branch at Russell Street, keep in touch with all that is newest and most fashionable in the world.

THE LONDON MARKET.

WE are indebted to the *Produce World* for the following Price Current, published in their issue of 4th December 1896. Our readers will doubtless be able to obtain a great deal of interesting and valuable knowledge therefrom. Myrabolams for instance are selling at from £3-6 to £4-6 per cwt., while the local Nilgiri price is barely Rs. 3-8 per bushel, or (say) Rs. 15 per cwt.

We intend to publish these Prices Current regularly every few months.

ASPHALTUM—		s.	d.	s.	d.
Egyptian	cwt...	50	0	0	0
Syrian	"...	12	6	31	0
BALATA	lb...	1	9	2	8
BARK—		£	s.	£	s.
Quercitron, U. S.	ton...	0	0	0	0
Mimosa, Aust., ground	"...	5	0	10	10
chopped	"...	5	0	10	0
BONES—		ton...	3	10	4
Aust. Cattle, common	ton...	3	10	4	0
Shank, low to fair	"...	3	2/6	7	10
" good and fine	"...	7	10	11	10
Knuckle and Piths	"...	2	15	4	2/6
Hoofs	"...	3	0	7	0
Crushed E. I.	"...	3	10	3	12/6
BRISTLES—		s.	d.	s.	d.
Shanghai } 5 1/2 to 7 in.	lb...	3	8	4	9
and } 4 to 5 in.	"...	2	7	3	6
Tientsin } 2 1/2 to 3 1/2 in.	"...	0	10 1/2	2	5
Hongkong, black	"...	1	7	4	9
" white	"...	4	6	10	2
Calcutta and Bombay	"...	1	0	8	6
CANES, Bamboo		each...	0	0 5/8	0
Malaca	"...	0	1 1/2	3	1
Partridge	"...	0	1 1/2	0	2 1/2
Whanghee	"...	0	0 3/8	1	3
Tonkin	1000...	10	0	50	0
Rattans	ton...	£17	0	£19	0
CHEMICALS—		s.	d.	s.	d.
Acid, Citric	gal...	1	2	0	0
Carbolic 60%	"...	1	8	1	8 1/2
" Crystal 39/40	"...	0	6 1/2	...	...
Oxalic	"...	0	3 1/2	...	...
Tartaric	"...	1	2	...	...
Alum, lump	ton...	£5	12/6	£5	15
powder	"...	£6	5	...	...
Ammonia, Sulphate	"...	£7	10	8	0
Arsenic, powder	cwt...	22	0	23	0
Benzole, 50%	gallon...	2	10	3	1 1/2
" 99%	"...	3	10 1/2	4	4 1/2
Bleaching Powder	cwt...	7	6	...	...
Borax, refined	"...	20	0	21	0
Calomel	lb...	2s.	8d.	3	0
Camphor, Brit., refined	"...	1	6	1	11
Corrosive Sublimate	"...	2	4	...	...
Iodine, dry	oz...	0	9	...	...
Lead, red	ton...	£0	0	0	0
Magnesia, Calcined	lb...	1s.	3d.	...	...
Citrate	"...	1	3	...	...
Phosphorus	"...	...	...	...	...
Potash, Bichromate	"...	0	4 5/8	0	5 1/4
Chlorate	"...	0	4 1/4	0	0
Hydriodate	"...	11	6	11	9
Prussiate	"...	0	6	0	6 1/2
Sulphate	ton...	£9	7/6	£10	0
Precipitate, red	lb...	3	0	...	...
white	"...	3	2	...	...
Sal-Acetos, British	"...	0	5	0	5 1/2
Ammoniac	cwt...	35	0	37	0
Soda, Ash	deg...	0	1 1/2	...	...
Bicarbonate	ton...	£7	5	...	...

CHEMICALS—(Continued).		s.	d.	s.	d.
Caustic, 70	ton...	£7	0	8	0
Hyposulphite	"...	£0	0	0	0
Crystals	"...	42s.	6d.	0d.	0d.
Sugar Lead, E., white	cwt...	30	0	...	...
brown	"...	18	0	19	0
Sulphate Quinine	oz...	...	...	...	...
British, in oz. bottles	1	2 1/2	...	...	...
German	bulk...	0	10 1/2	0	11
Sulphate Copper	cwt...	£15	17 6	£17	0
Sulphate Zinc	"...	18	6	...	...
Sulphur, roll	"...	5	6	8	0
flowers	"...	6	0	9	0
Tartar, Cream, 1st	"...	85	0	88	0
Vermilion, English	"...	2	2	...	...
China	"...	2	7	2	8
CINCHONA BARK—		s.	d.	s.	d.
Indian, Ceylon and Java	"...	...	...	...	...
Crown, Nat	"...	0	1 1/2	0	1 1/2
Renewed	"...	0	1 1/2	0	5
Red Nat	"...	0	1	0	2
Renewed	"...	0	1 1/2	0	3 1/2
Ledger, etc., Nat	"...	0	1 1/2	0	5
Renewed	"...	0	0	0	0
Calisaya Nat., flat	"...	1	0	2	0
Bolivian Cultvtd. quill	"...	0	3 1/2	0	4 1/2
Carthagea	"...	0	2 1/2	0	10
Columbian and N. G.	"...	0	1	0	4
Crown and gray	"...	0	0	0	0
Red	"...	0	6	8	0
COCOA—		In Bond—Duty 1d. per lb.			
Trinidad, fine to sup.	cwt...	51	0	62	0
mid. to good red	"...	41	0	50	0
common to ord	"...	40	0	42	0
Grenada, com. to fair	"...	39	0	43	6
good to fine	"...	43	0	46	0
Jamaica	"...	39	0	45	0
Dominica & St. Lucia	"...	40	0	46	0
Surinam	"...	41	0	48	0
Caracas	"...	50	0	70	0
Bahia, fair to fine	"...	43	0	47	0
Guaoquil, Machala	"...	47	0	49	0
Caraquez, etc	"...	47	0	52	6
Arriba	"...	52	0	64	0
Ceylon, No. 1, gd. to fine	"...	52	0	74	0
ordinary to fair	"...	40	0	52	0
COFFEE—		In Bond—Duty 14/- per cwt.			
PLANTATION CEYLON—					
small to low middling	cwt.	88	0	99	0
middling to good	"	100	0	106	0
bold	"	105	0	112	0
peaberry	"	100	0	127	0
EAST INDIA—					
small to low middling	"	80	0	96	0
middling to good mid.	"	93	0	99	6
good to fine	"	103	0	118	0
MOCHA—					
short berry	"	90	0	113	0
long berry	"	88	0	98	0
JAMAICA—					
good to fine ordinary	"	70	0	81	6
greenish to fine color	"	85	0	125	0
AFRICAN					
good ord. to low mid.	"	77	6	93	6
middling to fine	"	96	0	107	0
GUATEMALA—					
good ord. to low mid.	"	75	0	91	6
middling to fine	"	88	0	104	0
NICARAGUA & SALVADOR—					
gd. ord. ton fine ord. foxy	"	70	0	73	0
VERA PAZ—					
fine ordinary to mid.	"	87	0	94	0
good to fine	"	96	0	114	0
COLUMBIAN & N. GRANADA—					
ordinary to fine ord.	"	80	0	88	0
low middling to fine	"	87	0	99	0

COFFEE—(Continued).						
BRAZIL—		s.	d.	s.	d.	
Rio, fair channel	cwt	...	...	...	...	
Santos, good average	"	...	...	...	...	
COIR FIBRE—		£	s.	£	s.	
Cochin, fair to fine	ton...	16	0	20	0	
ordinary to middling	"...	13	0	15	0	
Ceylon, Mattress	"...	2	0	10	0	
Bristle, Ceylon	"...	10	0	30	0	
COIR ROPE		"...	13	0	16	0
COIR YARN, fine weaving		"...	25	0	35	0
medium to good	"...	12	10	21	0	
low & ordinary coarse	"...	9	10	14	0	
roping	"...	10	0	13	10	
COPRA—		£	s.	£	s.	
Australian	ton...	12	10	13	0	
Singapore, Penang, etc.	"...	12	10	13	10	
COROSOS Nuts		"...	5	0	8	10
COTTON—		s.	d.	s.	d.	
East India: Broach	lb...	0	3 ⁵ / ₃₂	0	4 ⁷ / ₈	
Sawginned Dharwar	"...	0	3 ⁵ / ₁₆	0	3 ¹³ / ₁₆	
Dholera	"...	0	3 ¹ / ₄	0	4	
Tinnevelly	"...	0	3 ⁷ / ₈	0	4 ¹ / ₂	
Western	"...	0	3 ¹ / ₄	0	3 ¹⁹ / ₁₆	
Coconada	"...	0	3 ¹ / ₄	0	3 ¹ / ₂	
Salem	"...	0	3 ⁷ / ₁₆	0	4 ¹ / ₄	
Bengal	"...	0	2 ¹³ / ₁₆	0	3 ¹ / ₂	
Rangoon	"...	0	2 ¹³ / ₁₆	0	3 ¹ / ₂	
Scinde	"...	0	2 ¹³ / ₁₆	0	3 ¹ / ₂	
Egyptian	"...	...	...	...	...	
American: Sea Island	"...	4	0	1	0	
Upland	"...	...	...	...	...	
Mobile	"...	...	...	...	...	
New Orleans & Texas	"...	...	...	...	...	
Brazil	"...	...	...	...	...	
African	"...	0	3 ³ / ₄	0	5	
DRUGS—		s.	d.	s.	d.	
Aloes, Cape	cwt...	18	6	£1	2/6	
Socotrine, fair to fine	"...	£2	4	£4	0	
common to mid	"...	25	0	50	0	
Hepatic	"...	20	0	80	0	
Curacao	"...	6	6	55	0	
Aniseed, China Star	"...	85	0	0	0	
Aniseed Oil	lb...	9	6	9	9	
Areca Nuts	cwt...	14	6	15	6	
Argol, Cape, fair to good	"...	45	0	56	0	
Balsam, Capivi	lb...	1	3	1	6	
Peru	"...	8	0	0	0	
Tolu	"...	2	6	...	...	
Bark, Cascarilla	cwt...	20	0	42	0	
Beans, Calabar	lb...	0	1 ³ / ₄	0	7 ¹ / ₂	
Tonquin, fine	"...	0	4	8	0	
Para	"...	0	9	2	4	
		£	s.	£	s.	
Beeswax, Australian	cwt...	5	17 6	6	15 ¹ / ₂	
Madagascar	"...	6	5	7	10	
Jamaica	"...	8	0	8	10	
Bleached Calcutta	"...	6	0	7	10	
		s.	d.	s.	d.	
Bucha Leaves, short	lb...	0	2	0	6	
Long	"...	0	3	0	5	
Camomile Flowers	cwt...	37	6	...	...	
Camphor, China	"...	125	0	...	...	
Japan	"...	130	6	...	...	
Canella Alba	"...	23	0	27	0	
Cantharides, China	lb...	1	0	2	0	
Russian	"...	2	0	2	6	
Cardamoms, Malabar	"...	2	0	3	0	
Mysore, good to fine	"...	0	0	0	0	
Tellicherry	"...	0	0	0	0	
Long	"...	1	7	2	6	
Seed	"...	3	0	...	...	
Cascara Sagrada	cwt...	15	6	17	6	
Cassia Oil	lb...	7	6	9	0	
Cassia Fistula	cwt...	5	6	16	0	
Castor Oil 1sts	lb...	0	2 ⁷ / ₈	0	3 ¹ / ₄	
Seconds	"...	0	2 ¹ / ₂	0	2 ¹ / ₂	
Castorum	"...	30	0	50	0 ¹ / ₂	
Cheretta	"...	0	1 ¹ / ₂	0	3	
Cinnamon Oil	oz...	0	5	1	3	

DRUGS—(Continued).

	s.	d.	s.	d.
Cinnamon Leaf Oil	oz...	0 4	0 0	
Citronelle Oil	lb...	1 2	1 4	
Coculus Indicus	cwt...	7 0	7 3	
Codliver Oil	barrel...	140 0	160 0	
Colocynth, Turkey	lb...	2 2	2 6	
Colombo Root	cwt...	25 0	27 0	
Croton Seeds	"	72 0	77 0	
Cubebs	"	19 6	26 0	
Cumin Seed	"	30 0	46 0	
Cuscuta Root	"	5 0	6 0	
Dragon's Blood, reed	"	80 0	130 0	
Lump	"	80 0	200 0	
Ergot of Bye	lb...	0 2½	0 4½	
Galangal Root	cwt...	18 0	19 0	
Galls, China	"	62 0	65 0	
Bassorah, Blue	"	48 0	52 0	
Green	"	38 6	42 6	
White	"	37 0	42 6	
Gentian Root	"	23 0	0 0	
Ginger Grass Oil	lb...	0 1½	0 3½	
Guaza	"	0 1	0 3½	
Guinea-Grains	cwt...	17 0	20 0	
Honey, Jamaica	"	17 0	34 6	
Ipecacuanha	lb...	4 6	6 0	
Jalap	"	0 8	0 0	
Kamala	"	0 4	0 8	
Kola Nuts	"	0 5	0 8	
Musk, Tonquin Pile	1 oz...	50 0	75 0	
Grain	"	20 0	40 0	
Nux Vomica	cwt...	5 0	7 6	
Oils, Bergamot	lb...	5 6	0 0	
Cajaputa	bottle	3 0	0 0	
Nutmeg	oz...	0 3½	0 4	
Peppermint, H. G.	lb...	10 0	...	
Japan	"	3 0	7 0	
Opium	"	7 6	13 0	
Quassia	ton...	£4 2 6	£12 0	
Rhubarb, Shensi	"	1 0	2 3	
Canton	"	0 8	1 2	
High-dried	"	0 6	0 10½	
Sarsaparilla, Mexican	lb...	0 3	0 4	
Guayaquil	"	0 9	1 4	
Honduras and Guat	"	1 1	1 2	
Jamaica	"	1 7	1 8	
Sassafras Root	cwt...	12 6	14 0	
Scammony, fine	lb...	30 0	...	
second and ordinary	"	10 0	25 0	
Skillep	"	5 6	10 0	
Scammony Root	cwt...	27 0	30 0	
Seneca Root	lb...	1 4	0 0	
Senna, Timuevely	"	...	0 8	
Alexandria, fine	"	0 9	1 0	
Squills	"	0 1	0 2½	
Vanilloes, fine	"	26 6	32 0	
fair to good	"	18 0	25 0	
common	"	7 0	15 0	

DRYSALTERIES—

	cwt.	s.	d.	s.	d.
Cutch, fine Tablets	28	0	33	0	
Slabs, fair	18	0	25	0	
Block, fair	0	0	0	0	
Gambier, Block	0	0	15	0	
Cubes	24	0	26	0	
Myrabolanes, Bhimlies	3	9	7	6	
Jubblepore	3	9	6	6	
Madras	3	6	4	6	
Calcutta	3	0	4	6	
Orchella Weed, Ceylon	12	0	15	0	
Bombay	10	0	20	0	
Plumbago, Lump	3	0	18	0	
Chips	1	6	9	0	
Dust	2	0	6	0	
Shellac, fine Orange	100	0	105	0	
Fine Second	85	0	95	0	
TN	75	0	80	0	
Inferior	0	0	0	0	
Button, First	87	0	95	0	
Second	80	0	83	0	
Third	74	0	77	6	
Fourth	60	0	68	0	

DRYSALTERIES—(Continued).

	cwt.	s.	d.	s.	d.
AC garnet	73	0	84	0	
OCC garnet	0	0	0	0	
Sticklac	40	0	52	9	
Tumeric Bengal	7	0	7	9	
Madras Finger	9	0	13	0	
Cochin, Bulbs	5	6	7	0	
Wax, Japan	45	0	0	0	

FARINACEOUS

ARTICLES—

	lb.	s.	d.	s.	d.
Arrowroot, St. Vincent	0	1½	0	4	
Bermuda	0	10½	2	0	
Farina, German	7	0	8	9	
Rice, S. Q., cleaned	...	...	...	...	
Rangoon, rough	...	...	...	...	
Japan, Native, cleaned	...	...	...	...	
Sago, small	8	0	9	3	
Medium	11	0	12	0	
Large	11	0	12	6	
Sago, Flour	6	0	7	6	
Tapioca, Flake, Singa-	lb.	0	14	0	2
pore and Penang	cwt.	5	6	9	6
Flour	...	9	0	10	6
Pearl, Seed	...	8	0	10	3
Medium	...	10	0	10	9
Bullets	...	...	...	...	

GUMS—

	cwt.	£	s.	£	s.
Ammoniac, drop	0	17/6	1	16/6	
Siftings and blocky	1	0	1	10	
Animal Zanz., gd to fine	12	0	14	12/6	
inferior kinds	1	17/6	5	0	
Bombay & Mdagasear	3	12/6	6	10	
Arabic, Turkey, picked	9	10	12	0	
Sorts	3	0	4	0	
Ghezira	1	13	1	15	
Aden	2	15	3	5	
Aurad, good and fine	3	5	3	15	
brown and yellow	1	15	2	10	
pickings and ord	1	10	2	0	
Gatty, common to fine	1	5	3	10	
Bussora, insoluble	0	5	1	2	
Australian	1	3	2	2	
Assafetida	0	15	3	10	
Benjamin, Siam	2	10	36	10	
Sumatra	4	10	11	15	
Palembang	0	16	1	17/6	

	s.	d.	s.	d.
Copal, Marilla, fine	38	0	105	0
mixed and soft	12	0	30	0
chips	12	6	30	0
Damar	33	0	100	0
Eleni	17	6	34	0
Euphorbium	17	6	25	0
Gamboge	£6	15	£9	5
Guacum	Os.	2½d.	2s.	10d.
Kino	400	0	500	0
Kowrie, finest	200	0	280	0
good to fine scraped	90	0	180	0
partly scraped	40	0	94	0
chips and dust	8	0	87	0
Mastic, Turkey	1	3	2	4
Myrrh, good to fine	70	0	90	0
ordinary to fair sorts	33	0	65	0
Olibanum, drop	20	0	65	0
garblings	7	0	15	0
siftings	9	0	14	0
Sandrac	45	0	85	0
Tragacanth, finest	£11	0	£14	15
low to good	£1	15	£11	0

GUTTA PERCHA—

	lb.	s.	d.	s.	d.
Finest	3	9	5	0	
Good to Fine	2	0	2	6	
Medium	0	6	2	0	

HAIR—

	s.	d.	s.	d.
Horse, South America	0	7	3	0
Australian	0	6	1	7
China, White	1	4	5	0½
Black	1	3	3	6

	ton.	£	s.	£	s.
HEMP—					
Sunn	12	0	19	0	
Other East India	10	0	20	0	
Manilla, brown, etc.	16	10	17	10	
fair current	18	0	18	10	
good to superior	20	0	24	0	
Quilot	25	0	40	0	
Mauritius	12	0	21	0	
New Zealand	15	0	16	10	
Sisal	16	0	...	...	
HORNS, Buffalo	20	0	37	0	
Deer	15	0	240	0	

INDIA RUBBER—

	lb.	s.	d.	s.	d.
Para, fine	3	5	3	8	
Negrohead	2	0	2	4	
Columbian, good to fine	1	10	2	7	
Madagascar, good to fine	1	0	2	4	
Niggers	1	3	1	9	
Mozambique, good to fine	0	10	2	6	
Assam and Rangoon	0	9	2	2	
Borneo	1	0	1	9	
Penang, Java, etc.	1	6	2	2	
ISINGLASS, Penang leaf	4	0	4	6	
Tongue	3	6	4	2	
Purse	0	8	1	3	
Saigon, Leaf	3	0	7	6	
Tongue	...	...	...	...	
Purse	0	8	1	0	
Bombay Bladder	0	9	3	0	
Tongue and pipe	1	8	3	6	
Purse	0	5	1	3	
Kurrachee leaf	0	9	2	9	
West India, Lump	2	0	3	2	
Brazil, gd to fine Lump	3	5	3	6	
ordinary to fair Lump	2	0	2	4	

IVORY—

	cwt.	£	s.	£	s.
60 lbs. and upwards	52	0	65	10	
40 to 60lbs	40	0	50	0	
Under 40lbs	20	10	32	10	
Scrivelloes, Ball	43	0	67	0	
Scrivelloes	14	0	36	6	
Cut Pieces for Balls	50	0	86	0	
Cut Points	28	0	76	0	
Cut Hollows	25	0	41	0	
Cores	12	0	35	0	

METALS—

	ton.	£	s.	£	s.
Antimony					
Crude, Japan	14	0	16	0	
Regulus, Eng f o b.	30	0	...	...	
Copper, British, cake & ingot	48	10	50	10	
Best Selected	49	0	53	0	
Sheets, strong	58	0	0	0	
India	55	0	56	0	
Australian	49	0	52	0	
Chili Bars & G.M.B.'s	47	10	48	0	
Yellow Metal	0	4½d	0	5	
Iron, Pig in Scot	46	2½	...	...	
Bar, Welsh in London	5	10	5	15	
in Welsh	5	10	5	12	
Staffordshire, Lndn	5	15	6	10	
Rail, in Wales	4	10	4	15	
Sheets, single in Lndn	7	0	7	10	
Hoops	6	10	6	15	
Nailroads	6	5	6	10	
Lead, Pig, Spanish	11	5	...	...	
English, com. brands	11	5	...	...	
Sheets, English	12	7/6	...	...	
Shot	15	2/6	15	...	
Quicksilver	6	12/6	...	...	
Spelter, Silosian	18	0	...	...	
ordinary brands	17	0/3	0	1	
Tin, Straits	58	2/6	58	1	
Australian	59	2/6	0	...	
English Ingots	62	0	65	1	
Tinplates, IC coke	10	0	11	...	
Zinc, Eng., sheet	21	0	0	...	

OILS—		£	s.	£	s.	SPICES—(Continued.)		s.	d.	s.	d.	SUGAR—(Continued.)		s.	d.	s.	d.
Olive Spanish	ton...	29	0	...	...	Cinnamon, 1st quality	cwt...	0	10	1	5	Egyptian	...	8	6	9	0
Syrian	"	31	0	32	0	Second	"	0	9	1	3	Manila	...	...	...	...	...
Cocoanut, Cochin	"	27	0	28	0	Third	"	0	8	1	2	Java	...	11	6	...	...
Ceylon	"	23	0	24	0	Fourth	"	0	8½	0	10½	China and Siam	...	...	...	...	...
Copra	"	20	0	21	10	Cinnamon, Chips, etc.	lb...	0	3½	0	9	BEETROOT (German) 88°	...	9	0	0	0
Palm, Lagos	"	24	0	...	...	Cloves, Amboyna	"	0	3	0	5	Bate's No. 1	...	15	6	...	...
Linseed	"	15	0	17	2/6	Penang	"	0	6	0	9	" 2	...	14	6	...	...
Rapeseed, brown	"	24	10	22	5	Zanibar	"	0	2	0	2½	Austrian	...	11	6	11	9
Cottonseed, refined	"	15	0/6	16	10	Clove Stems	"	0	1	...	...	Brazil	...	...	...	...	...
		s.	d.	s.	d.	Ginger, African	"	...	...	...	...	Dutch Leaves	...	...	...	...	...
Lard	"	25	0	27	10	Bengal	"	13	0	14	0	Paris Leaves	...	13	0	0	0
Petroleum, U.S. Refined	gal.	0	5½	0	5½	Cochin cut, C to A	"	60	0	71	0	TALLOW—					
Spirit	"	0	8½	0	9	Rough	"	33	3	35	0	Australian, Beef, gd to fine	cwt	19	6	20	0
Russian	"	0	5½	0	6½	Washed	"	31	6	34	0	Sheep, good to fine	"	20	6	21	6
Turpentine, American	cwt.	19	7¼	19	9	Jamaica	"	75	0	125	0	TEA—					
OSTRICH FEATHERS—						Nutmegs—						INDIAN, Pekoe, finest	lb...	1	1¼	2	10
White	lb...	85	0	130	0	Small 132 to 100	"	1	0	1	6	good to fine	"	0	8	1	1
Femina	"	30	0	120	0	Medium, 95 to 80	"	1	7½	1	10	common to medium	"	0	5	0	8½
Black	"	10	0	120	0	Large, 78 to 64	"	2	0	3	2	Pekoe Souchong, fine	"	0	8	1	1
Drab	"	2	0	75	0	Mace, good to fine Penang	"	1	6	2	4	common to good	"	0	6	0	7½
Boos	"	7	0	45	0	Common to fair	"	1	3	1	7	Broken, Pekoe Fan-					
Spadones	"	1	0	60	0	Pepper, Black, S'gapore	"	0	2½	0	2½	nings and Dust,					
RAFIA FIBRE	ton	£25	0	£28	5	Penang	"	0	2	0	2½	good qualities	"	0	7	0	11
SANDAL WOOD, Logs	ton	£30	0	£50	0	Aleppy, etc.	"	0	2½	0	2½	common	"	0	4½	0	6
SHELLS—						White Singapore	"	0	4	0	4½	Broken Pekoe, finest	"	2	0	3	0
Cowries	cwt...	15	0	30	0	Penang	"	0	3	0	3½	good to fine	"	0	11	1	10
Green Snail	each...	0	1¼	0	7	Pimento	"	0	2½	0	2½	common to medium	"	0	6½	1	0½
M.-o'-P., Sydney	cwt...	90	0	140	0	SPIRITS—						CEYLON, Pekoe, finest	"	1	3	1	4
West Australia	"	92	6	165	0	Rum, in bond (duty 11¼)						good to fine	"	0	10	1	6
Black-Edged	"	97	6	210	0	Jamaica, fine	gal	2	10	5	0	common to medium	"	0	5	0	9
Manila	"	110	0	150	0	32 to 36° ov. proof	"	1	10	2	9	Pekoe Souchong, fine	"	0	8	0	10
Macassar	"	175	0	180	0	26 to 30	"	1	9	1	10	common to good	"	0	5	0	7
Banda	"	41	0	45	0	Demerara, proof	"	0	11½	1	2	Broken, Pekoe Fan-					
Bombay	"	77	6	97	6	Mauritius and E. I.	"	...	...	...	...	nings & Dust, good	"	0	10½	1	10
TORTOISESHELL						SUGAR—						common	"	0	5	0	7
SPICES—						Jamaica	cwt...	9	0	10	9	Broken, Pekoe, finest	"	1	6	2	4
Capsicums, long	cwt...	5	0	30	0	Trinidad	"	12	0	14	0	good to fine	"	0	10	1	10
Short	"	20	0	35	0	Demerara	"	11	6	15	6	common to medium	"	0	7	0	10
Cassia Lignea	"	34	0	35	0	Madras	"	0	0	0	0						
Chillies, Zanzibar	"	26	0	34	0	Mauritius	"	9	0	10	0						

LETTERS TO THE EDITOR.

GUM-KINO.

SIR,—I should feel obliged if you or any of your readers could give me some information about gum-kino, for instance the best way of removing impurities, best way of packing it, and who are the best people to send it to. STICKY.

POLLEN.

SIR,—Can the pollen of a flower be carried any distance, without detriment to its properties? For instance, would it be possible to hybridize at Ootacamund with pollen obtained from Burma? If not, why not? On the contrary, how should the pollen be transferred from the one place to the other?

Yours faithfully,
D.

BANDICOOTS.

SIR,—Will any of your numerous readers let me know of a way to exterminate bandicoots? My bungalow is infested by them, and although I have used various descriptions of traps, have entirely failed to catch any.

KADUR DISTRICT, 24th December 1896.

"H."

"IMP DUNGING."

DEAR SIR,—Your P.D. has spelt the above in the last para. of my article on the "Brief Review of the Nitrogen Question" "Quilp dunging." "Imp dunging" (Impf dünger für leguminosæ. See P. O., No. 29, page 17) is the new and scientific system "made in Germany" of manuring with Bacteria.

Yours faithfully,
"BET."

18th December 1896.

TO WINTER ORANGES.

SIR,—In last number of *Planting Opinion* you ask if I have ever tried wintering, &c., my orange trees; I have only manured them. If any of your correspondents can give me any advice how I should treat them so as to try and get them to ripen their fruit about this time or any time before the monsoon, I shall be much obliged.

KULSAPORE ESTATE, KOPPA, }
MYSORE, December 14th, 1896. }

Yours faithfully,
G. LESLIE.

VISITING AGENT.

SIR,—Will you or some of your able readers define the above two words "Visiting Agent." I do not mean the man who looks after a neighbour's property while he runs home for a month or two, but the individual who "roams" from one end of the Hills to the other including other districts, and pays a visit of some two or three hours to each estate drawing from Rs. 25 upwards for each visit and writing a lengthy (?) report, worries the manager with 1,000 and 1 orders which he knows can never be carried out, and then proceeds to the next tote; I define him as a "nuisance" and not worth his salt. ANON.

A CURE FOR BLACK BUG.

DEAR SIR,—Having seen in your paper of 9th May a very interesting letter from Mr. Newport on "Lady-birds and Bugs," in which he gives Professor Koebele's remedy for Black Bug, I was induced to try the mixture (carbonate of soda and resin) on some plants which were very bad with this blight; after three applications the bug has almost entirely disappeared, and

as the cost is very trifling. I should think that many of your readers may be induced to try this very simple, and in my case effective, remedy.

Yours faithfully,

A. W. BRODIE.

[The remedy alluded to is as follows:—Boil in two pints of water 3 lbs. washing soda (carbonate of soda) and four lbs. resin until well dissolved, then slowly add hot water while boiling to make 5 gallons of the compound. Dilute with cold water before cooling to make 40 gallons of the wash for the mealy bugs or 60 gallons for plant lice.—Ed.]

SAMBUR vs E. LITHOSPERMA.

DEAR SIR,—I see your correspondent "Coffee Planter" in last P. O. states that sambur have been eating his E. L. plants.

USE JADOO FIBRE

for Coffee, Tea, Cinchona, Tobacco, Oranges, Indigo and Sugar Cane.

Vide Leading Article in Madras Mail
of 9th September 1896.

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Notes on Cardamom Cultivation (one copy left) ...	... T. C. OWEN ...	... 1 0 0
Cotton Cultivation in Ceylon (two copies left) ...	... HON. W. W. MITCHELL ...	... 0 8 0
The Ceylon Tea Industry (In 1886, instructive history) ...	... JOHN HAMILTON ...	... 0 12 0

P.S.—Any books required, not in the above list, we shall do our best to procure and forward by Value Paya Post only.

“PLANTING OPINION,” COONOGOR.

Whether they will go in for it regularly is another thing on which I am unable to express an opinion, as they do not eat E. L. in this district; but I know what they eat in one district they leave alone in others. Perhaps the sambur will get ill if they eat too much of it. Mr. Hooper is my authority for the statement I made that it contains a poisonous alkaloid "Erythrine," the shoots therefore being unfit for fodder, so I think there is still hope that on a large scale it may disagree with sambur. I know a case of E. L. being eaten by something, for a time, believed to be jungle sheep, and afterwards left alone; I cannot say for certain whether the sheep were affected by "Erythrine," but in any case the trees have been left alone since, which rather looks as if they made themselves ill.

Yours faithfully,

ARIENKOW, SHENCOTTAH, 30th Dec., 1896.

B. NELSON.

ALL ERYTHRINAS ARE NOT E. LITHOSPERMAS.

SIR,—An old planter like "Jno. D. M." must have seen any number of "Erythrinae" growing all over the country, and if he had benefited by his long experience ought to know it is put down by natives on the slightest provocation as shade, as a curse for the beetle-vine, jasmine, etc., as posts for fencing and "Chupras."

It is satisfactorily proved that E. Lithosperma is a new variety, and if "Jno. D. M." would get the seed of the varieties growing in Mysore and compare them with that of E. Lithosperma and verifying his statements before jumping to conclusions and into print, it will, to say the least, save us from confusion. It's pretty rough on "Rêve d'Or," who has introduced a new tree and brought it prominently to notice, to be told that every cooly that sticks down what his ancestors from time immemorial have stuck down for shade had not heard of him.

G. R. O'BUSTER.

[Your remarks on "D. M." 's statement regarding the age of Grevelias were anticipated two numbers ago by the writer himself.—ED.]

TEOSINT AS FODDER FOR SILOS.

SIR,—My experiment was on three acres of land, two silos were filled $30' \times 6' \times 6' \times 2' = 2,160$ cubic feet, at 35 lbs. the c. foot = 34 tons of compressed food. The cost was about Rs. 108 or about Rs. 3 a ton as follows:—

Trenching one foot deep three feet apart	Rs.	36	0	0
Manuring in trenches 18 tons at Rs. 2 per ton		36	0	0
Cutting crops and chopping into four inch pieces		20	0	0
Weeding 3 acres	...	15	0	0
Sowing	...	1	0	0

Total Rs. 108 0 0

The allowance of food per head is 25 pounds: thus an acre produces eleven tons = 985 head of cattle or 80 head for one month or six head of cattle for one year. The Australian computation is eight head for one year per acre. My soil was indifferent Badaga land never manured before; on some parts where the soil was good, the stalks were 8 feet high, on poor land but four feet. The seeds were sown early in April, reaped in November; the plant tillers if cut over young, but not after flowering. The time to cut the crop is when it flowers. Bill-hooks are used for chopping the stems, and elevation of my land 5,400, perhaps 4,000 would be better.

Seeds sown in the trenches three inches apart.

AGRICOLA.

THE IMPORT DUTY ON ARTIFICIAL FERTILISERS.

SIR,—With reference to a representation that it would be well to admit artificial fertilisers into this country free of import duty, I have been requested to submit to Government

statistics showing the approximate quantity of such fertilisers used in the course of the year.

The Honorary Secretaries of District Planting Associations are of opinion that it would take months to collect such figures from planters, even if it would be possible to do so at all. I am therefore applying also to importers for information on the subject.

As it is impossible for me to be sure of applying to every importer, I venture to ask if you will kindly publish this letter, as an appeal to Planters and Importers to furnish me, as promptly as possible, with the figures of their own purchases or imports.

Only totals have to be put before the Government, and I will undertake that all information supplied to me shall be regarded as strictly confidential and shall be used solely for the purpose of arriving at the required totals.

Thanking you in anticipation,

I am, dear Sir, Yours faithfully,

HARRY ORMEROD, *Secretary*.

UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA, }
MADRAS, 21st December 1896.

GREEN MANURE.

SIR,—Your "legume cult" has now a large following. Can you not persuade the men who have given "the thing" a trial to let us have the benefit of their experiences? "Flying Haystack" in a back number mentions having grown cow-pea and asked for information regarding its treatment. Presuming he obtained the desired information, what have been the results of his pea? While on the subject, is not growing legumes in this manner rather tempting insecticide? Is it not probable that in the above-mentioned case an army of caterpillars might have settled F. H.'s doubts in a manner peculiarly their own? Having done this, is it not also probable and natural that they should have turned their attention to the coffee and caused it to suffer? From the depths of your knowledge, Mr. Editor, can you not pass a weighty opinion as to the possibilities of such occurring being real or merely a chance in a hundred. Until one established a growth of leguminous "trees," I should imagine that legume as a shrub or creeper would be safer grown independently, and in a reserve of its own. But then growing one's manure is troublesome. Are not the tons and tons of green stuff which surround most estates in the form of jungly undergrowth all available as manure, and manure of a valuable quality? Year after year one sees a most luxuriant growth spring up at the burst of the S. W., and year after year one sees it greedily devoured by the wild fires of March and April. Would not this "stuff" cut green and applied to one's estate be of great benefit? With regard to the mode of application, I am told that the best way would be to thatch the land between the rows of coffee, and to fork in the thatch about the end of the N. E. Monsoon, when it will be partially if not wholly decomposed. A more sensible way, I should imagine, would be to dig the common or garden reno, fill them up to about seven-eighths with green growth, and then flush the pits with a small quantity of earth. In this way decomposition would be assisted, and beneficial properties contained in the green manure confined wholly to the good of the soil. In conclusion, when would it be most advisable to cut the green growth, during its succulent stage, or when it had attained a more hardy and woody age?

WYNAAD BEAN.

[We cannot quite follow all our correspondent's arguments, but cordially agree with the value placed on green jungle. Planters who swear by "bulky cattle," and spend many thousands of rupees every year in its purchase, might well turn their attention to the far cheaper form of green jungle bulk.—ED.]

COLD WEATHER PLANTING.

SIR,—I have read the criticisms on this method of planting with interest and have tried it myself.

I put out between the 15th and 22nd October 10,000 or 11,000 plants with big balls cut out of the nursery, and on the 18th December weeded the clearing. Nett result: 12 plants dicky or dying. Notwithstanding a favorable season, I think this is sufficient evidence as to efficacy of this method. Every plant put out has put on at least two pair of leaves, and some four, and those I have lifted for examination show that the roots have broken the ball and started in the pit. Further than this I cannot go at present, but it appears to me that if you can *establish* plants, however small, in October or November, there must be a big growth with the early rains, and you have practically saved a year by adopting this system.

I cannot agree with your correspondent regarding rooting. If you make up your mind to plant in this manner, you must put more money into nurseries, and plant 6" to 9" apart, and then there can be no doubt as to the plants to be taken. In N. India more space is allotted to nurseries than down here, and the same place is not kept going year after year, in fact it is recognised that a good nursery means a good clearing. Turned roots, &c., are easily seen and rejected.

"Seed at stake" is another method and generally successful. Put these seeds into each pit and "mulch" them. The failures can be recruited from the good lots.

I put out a few acres on "Bortkanee" estate in Assam, and many plants were over three feet high the following monsoon. It is rather a hazardous experiment, but if it turns out successfully, a great saving, as a season is gained and all nursery expenses avoided.

Your correspondent has hit a very right nail. Let subscribers send a few practical hints and personal experiences. Science will do us a lot of good, and help our industry, but why hug our own little fads to our own breasts? One more remark. Let the tea planters exchange samples daily, with brokers' report and prices when possible. Individual estates getting records are satisfactory to managers and proprietors, but I am sure that the Nilgiri Tea Industry would be advanced if instead of isolated estates obtaining high prices the all-round average was raised, and which can be done only by more interchange of samples and ideas between the responsible producers. P.

ORANGE GROWING AND GRAFTING.

SIR,—I was glad to see that my letter on the above subject in *Planting Opinion* of 21st ultimo elicited some information from General Leslie regarding his experience with European varieties. He is evidently badly placed so far as climate is concerned. Coorg has a heavy rainfall in the Western part of the Province, but it is very considerably less as you travel Eastwards. I am not sufficiently acquainted with the relative merits of the various localities where the orange is grown to say which is the best or from which comes the most abundant supply. I should say away from the heavy rainfall of the Ghats is probably the most favourable situation. The fruit I believe ripens about November, which is practically the dry season. As Mr. Leslie only speaks of imported kinds, I would conclude there are no naturalized or indigenous sorts in his neighbourhood, more especially as he does not propose trying grafting himself. Why not try some Coorgs.

There is no doubt the orange tree thrives and produces well in Coorg, as it doubtless does in many other places, so grafting may prove the means of introducing finer and more valuable varieties. It is at least well worth trying if it has not been already done. Mr. Cameron, of the Lal Bagh Gardens, Banga-

lore, who I am glad to see contributes valuable information regarding other products to *Planting Opinion*, may have something to say on the subject. And through the Resident of Mysore, who is also Chief Commissioner of Coorg, his services might be obtained for instituting experiments. A good graft for the superior varieties of lemon might also be found. The important results of grafting are nowhere better seen than in the fine mangoes which are now produced in such large quantities from graft trees in Bangalore, and in fact in nearly every part of the Mysore Province.

The bitter orange too grows freely in Coorg, and the people of India need not go so far afield as Seville for their marmalade. In this country we have both the fruit and the sugar wherewith to make it.

The Coorg men seem to find a ready market for their ordinary oranges. Waggon loads (many in bulk) are forwarded to Bangalore and other places within reach of the Southern Mahratta Railway. Quantities more carefully packed in baskets are sent to Hyderabad and Bombay, and I am told even to places beyond Bombay. What is wanted are facilities for rapid and cheap conveyance. The worst part of the journey is in carts from Coorg to the nearest Railway Station at Mysore or Packswan. A regular trade seems to have been established, and as in the mango season so in the damp season there are loads of dealers always ready to contract for the fruit on the trees and find a market for it.

STEAM.

THE VAGARIES OF THE POST OFFICE IN A PLANTING DISTRICT.

SIR,—May I, through your journal, give an instance of how Planters' letters are sometimes tampered with by the Post Office officials.

Some months ago I went away for a short holiday, and on my arriving at a town on the West Coast found it necessary to send some money back to the estate for weekly advances, for which purpose I procured two currency notes, wrapped them in a blank sheet of note paper, and registered the letter myself at the Post Office, the letter being duly addressed to my bungalow. On my arrival home after a couple of weeks, I was rather surprised to hear that no notes had been received in the letter, which from outside appearances seemed all right, but on being opened was found to contain the same sheet of note paper I had enclosed, but instead of encircling the notes, it was protecting a half sheet of *thick foolscap*—the same as we are familiar with as emanating from Government offices.

I immediately forwarded cover, papers, and full particulars of complaint to the Head Office, Madras, and was informed that full enquiries would be made. Some months passed before an Inspector, a former Sub-Postmaster, came to my bungalow to take down a report of the matter, and every assistance was given him to obtain particulars from the tappal cooly who brought the locked tappal bag, and from two or three witnesses who saw the bag and letter being opened.

Another two months went by, during which I was informed that enquiries were being made at the Post Office where I posted the letter, and only the other day (seven months after the abstraction took place) I was told that the result of the enquiries showed that no Post Office official was implicated in the "alleged abstraction."

I will not withhold the name of the Post Office [But we shall as we do not fancy that style of advertisement which arise from an action for libel.—Ed.], as it has already earned a name for itself in other respects, but now learn that amongst the merchants and shopkeepers there, it is freely said that the Sul Inspector, who was supposed to have investigated the case, was

known to have received a "douceur" from the Postmaster to quash the case.

Now I would ask you, if the Post Office is supposed to be responsible for the *contents* of a Registered letter, or, as in this case, merely for the delivery of what they may choose to call an intact letter.

MUDGERE, KADUR DISTRICT, }
30th December, 1896. }

"HOYATU."

[As far as we can understand the Post Office Rules, responsibility for any except insured articles is expressly denied by the authorities. For all that, "Hoyatu's" case is a peculiarly hard one, and we should advise him to bring a charge of bribery and corruption against the offending officials.—ED.]

SOME QUERIES AND NOTES.

DEAR SIR,—Now that, thanks to *Planting Opinion* and to Mr. Nelson, "leguminous" has become a household word amongst planters, and we are all looking for the nitrifying "poochie," may I be permitted, through the medium of your valuable journal, to put you or any of your correspondents a query. Are the nitrate nodules found on the roots of leguminous plants used up by them in maturing their own crop? Or to give an instance, to make my meaning clear; could a crop of cow-gram be taken off a clearing and still leave the nitrogen in the soil for the benefit of the coffee?

It sounds rather like eating your cake and having it; but if the nitrogen is used up *in toto* by the leguminous plants, where does rotation of crops come in? And how does taking a leguminous crop off your land enrich it? [The nitrogen contained in the roots of the cow-gram or other leguminous plant is the answer to the seeming puzzle. This matter is referred to elsewhere.—ED.]

I noticed some time ago a correspondent was much distressed about "Foxy Parchment." This takes me back to my first coffee planting days, now twenty years ago, when I had to cure my first crop with temporary pulping arrangements. I had covers made for my vats to lock for additional security, and I can well remember my disgust when I washed the parchment out of these vats for the first time after the usual 36 hours' fermentation: it turned out a sort of slate colour; however, the covers answered after I bored $1\frac{1}{2}$ inch auger holes in them to let out the air. I mention this as just possibly I may have hit the right nail on the head, and your correspondent may have covered his vats which would cause over-fermentation even in 24 hours and turn his parchment foxy.

May I presume to offer a suggestion for what it is worth. Would it not add to the practical use of your paper if you could publish a building article in each issue, with a plan of a small and inexpensive bungalow for instance, with rammed earth walls and shingle roof, giving the quantity and cost of materials and cost of erection based upon actual experience. I am sure contributions would be forthcoming if invited. Cattle sheds, cooly lines, stores and pulping houses, with pulping and curing arrangements, tea factories, &c., &c., could all be treated in their turn. Local knowledge would be disseminated and many a valuable hint picked up by intending builders. Now, Mr. Editor, I am afraid I have already trespassed on your valuable space.

Yours very truly,
BEN TEAK.

PALAMADOO ESTATE, MERCARA, }
N. COORG, 30th December, 1896. }

[Regarding your last suggestion, for which many thanks, we shall try and carry it out. Like many other valuable ideas, alas, it at present only demonstrates what invaluable help this paper might render its readers but for one thing. And "that one thing," as Mother Seigel says, is a very important thing. It is, that our readers should try and help themselves, by using their pens as well as their eyes.—ED.]

AN INTERESTING CONVICTION.

DEAR SIR,—I secured a conviction some time ago under the Travancore Regulation I. of 1040, which corresponds to the much discussed Act XIII. of the British Indian Government. As a conviction under this statute is so rare, the circumstances of the case will, I think, interest your readers.

A Kangany contracted to fell 100 acres for me, and received an advance of Rs. 300. The contract provided that he should bring up 60 able-bodied men and commence felling on the 31st October. He never turned up. On the 28th November I put the case before the Magistrate, and a warrant was issued for the man's arrest. He was caught and produced before the Magistrate, who wrote to me requiring my attendance at Court on the 15th December. After proving the contract deed, the Magistrate explained the law, which was that at the option of plaintiff the prisoner would be required to return the money or perform the work. I was asked which I preferred. This put me on the horns of a dilemma.

First horn.—If I ask for the money, and the man returns it to me, he is free, which is what I want to avoid.

Second horn.—I am running the man in because he failed to bring coolies before the 31st October, and seeing that the time is long past, I don't see how I can ask him to fulfil that portion of the contract.

I chose the second horn of the dilemma, and asked that the Court compel the man to perform the work. The Magistrate then explained that he had the power to grant an extended time, and accordingly he named 30 days, before the expiration of which the man was to bring up 60 able-bodied men. The Kangany's face brightened up; he would be free for 30 days, after which he could reside in British territory, and in perfect safety, as the offence was not extraditable.

But a happy thought struck me just in time, and I asked the Magistrate if there was to be no security given that the work would be done.

The law was looked up on the subject, and it was found that the plaintiff could demand security, and if the defendant could not produce it, the Magistrate could sentence him to three months' rigorous imprisonment. I accordingly formally demanded security, and the Magistrate named the sum of Rs. 300 to be produced within three days. As the Kangany expressed his inability to furnish security, he was sentenced to two months' rigorous imprisonment, and was removed to gaol forthwith.

This seems rather a roundabout way of getting the man punished, and, as far as I can see, he is not in prison for breach of contract at all, but because he cannot produce security for its due fulfilment! I subsequently enquired what would have happened if the security was produced, and was informed that the man would have been liberated with an order from the court to fulfil the contract within a fixed time. If he failed, the security would have been forfeited, and the man would have been imprisoned, not for breach of contract, but for contempt of court!

It must be remembered that this conviction was obtained under the Travancore, and not the British Indian, law.

Yours faithfully,
A. F. M.

COFFEE.

A likely story!

Some well-meaning individual has been pulling the editorial leg of an English contemporary, probably with a view to give home prices a fillip. He is said to be a South Indian Planter:—

I would draw your attention to the following:—Last season I sold my refuse and native coffee, that as you no doubt know means the coffee left on the trees that never ripens, and the coffee picked off the ground some 60 to 70 maunds (28lbs. maund). The price I received was 18 rupees per maund, equal to £80 per ton on the spot. I have absolutely no expenses. No carting—no curing—no freight and no commission of any kind for best ordinary Mysore Plantation. This price in London was unequalled. You must remember that in sending coffee to London, *somebody*—I do not know who it is—reduces the quantity *shipped*, and the quantity *sold* by about two lbs. per bag—this, I am told, is “draft,” or “allowance” in London. In India, it would be termed differently!

Coffee stenophylla.

There are now three specimens of this variety of coffee growing on the Nilgiris, one of which is at Burliar and the other two in private gardens. They are apparently the only specimens of this variety left in Southern India, and were kindly sent us by Mr. Cameron of the Bangalore Lal Bagh, as they were not found to thrive there at all. The U. P. A. would do well to obtain a consignment of the seed through the Kew Gardens. The following details regarding this variety of coffee is taken from the Kew Bulletin, p. 167, of 1893:—

The narrow-leaved “wild,” “bush,” or native coffee, is sometimes found wild on the hills, and is more often cultivated by the natives than the Liberian. It grows very freely, and appears to yield quite as much as the Liberian, but it is somewhat longer in coming into bearing. Both the natives and French traders at Freetown say that it has a superior flavour, and prefer it to the Liberian. In fact, latterly, a certain amount has been exported to a wholesale French dealer, who is said to sell it at 4 francs 50 centimes a lb. as “best mocho.” Considering that it is worth in Freetown about 6d. a lb., this should be a fairly profitable trade, and a trial shipment should be made by the English merchants to find out exactly what the market value in Liverpool would be. The plant appears to thrive best on the higher hills about Sierra Leone, on gneiss or granitic soil, and can be grown from 500 to 2,000 feet. Probably it may be grown both above and below these limits.

Tannery refuse.

In answer to a query regarding the action of this manure, Mr.

Winterbotham says:—

I find that it does not act as quickly as poonac, which is quickest but about as soon as cattle manure.

Probably the admixture of lime with the hair prevents decomposition for a time, which is perhaps as well. The action of groundnut poonac especially is almost explosive, in a warm climate, and one would think that some of the nitrogen must be lost before the trees' roots can rise to the occasion?

Of the hair manure I put 1lb. to a tree dug in a shallow circle 15" from tree stem and got fair results, which so far have not “gone off” (9 months after), but 1½ or 2lbs. might well be put.

Pari passu, the following clipping from a home exchange may be turned to advantage:—

Fertilizing fruit-trees.

“There is much yet to be learned respecting the fertilizing of orchard lands. In general, nitrogen can be supplied in sufficient quantity by thorough tillage and the use of occasional cover crops of crimson clover, peas, or vetch. In fact, it seems to be easy to apply too much nitrogen on some lands, causing the trees to make too heavy growth. Young trees make light drafts of potash and phosphoric acid, and it is probable that apples and pears do not need much fertilizing on good soils for the first three or four years, if they are given good cultivation, unless other crops are grown with them. But just as soon as the trees show an inclination to bear, judicious application of the mineral fertilizers may be made. If this fertilizing is begun thus early in the life of the orchard, and if the tillage is good, the application need not be very heavy, but they should be applied every year. Two or three hundred pounds of high-grade muriate of potash, and an equal weight of some high-grade phosphate (as Florida or South

Carolina rock or fossil bone) may be considered to be good dressings. Stable manures are excellent, but they are so seldom to be had in sufficient quantity that they are practically beyond reach.”

Prices, etc.

East India Coffee will, it is to be hoped, says the *Produce World*, net better prices in the days to come than such figures as 105s., 106s. and 107s., at which figures sales of good bold Coffee have recently been made. Now really these figures can hardly be called remunerative when shippers' interests are in mind. Such prices, however, are unfortunately all that can be obtained when a planter wants to clear out fifty, one hundred, or a hundred-and-fifty bags. What reason on earth is there to prevent that self-same coffee being sold direct to the small shopkeepers who are willing to pay, and glad to get the coffee at such prices as 120s., 122s. 6d., and 125s. per cwt. In speaking of East Indian coffee, it should interest some of our Indian friends to know that the stock of this grade is some 5,000 bags short of the stocks held for account of dealers and speculators in November, 1895. A correspondent, whose letter we publish in another column, calls marked attention to the glaring injustice of the allowance termed “Draft”—we have no wish to “give it away” too much, but at the same time we would like to have his opinion on the terms “first, second, and third class sea-damage.” It would be interesting to know what the Dock Company considers as “first-class-sea-damaged” and what the damage really amounts to. We know that the broker promptly knocks off a £1 per ton for first-class “sea-damaged” and the sender no doubt has the amount duly deducted in his account sale. Notwithstanding this, however, there are plenty of consumers who take this (so-called) first-class sea-damaged stuff at the ordinary rate, and the £1 per ton deduction disappears somewhere.

THE ONLY WAY TO IMPROVE OUR COFFEE STRAINS.

ADVICE FROM DR. MORRIS, DIRECTOR OF THE ROYAL KEW GARDENS.

The following is a letter in answer to some queries of ours, forwarded through a friend, regarding the advisability of replacing the disease-stricken coffee seed of South India with new and preferably wild strains. Our readers will note that, barring the valuable suggestion of beginning the experiment with first rate Blue Mountain seed (which has already been acted upon in a careless, haphazard manner), the gist of the sound advice Dr. Morris gives us is identical with that which appeared in our issue of December 5th from the pen of Mr. J. Cameron, of Bangalore.

There is one thing we would strongly impress upon our readers, and that is, the improvement of our strains is *purely a planter's matter*. It is a work in which everyone of us can take our part, though the first steps, *i.e.*, the introduction of first rate Blue Mountain coffee, might fitly be undertaken by the United Planters' Association.

Writing under date of 14th December 1896, Kew, Dr. Morris says:—

The suggestion [*i.e.* about going back to the wild stock.—ED.] is similar to many that reach me from various parts of the world. It is based really on a misapprehension of the means adopted by highly skilled horticulturists in working up improved stocks of cultivated

plants. Instead of going back to the original wild stocks these people start from the best of those now existing and by careful selection and cultivation produce strains of the highest merit.

Although plants affected by disease may have deteriorated individually, yet in a large area there would be found numerous individuals of healthy constitution and quite capable of responding to the influences of improved cultivation and a wise and skilful selection. If you go back to the wild stock you have to traverse afresh all the gradations of improvement already obtained, with possibly no better result than at present.

The only way to really improve the present coffee plant is, as your friend, who forwarded the letter.—Ed.] suggest, to carry on systematic experiments extending over several generations and seizing upon every indication of improvement to fix it at each stage until the desired result is obtained. To some extent, but not in a very scientific way, improvement had taken place in the character of the coffee cultivated in the Blue Mountains of Jamaica. The plants are prolific, bear large beans of good colour, and the produce is possibly the best of any appearing in European markets. It often fetches 142/ per cwt. The quantity is small owing to the difficulty of obtaining forest land suitable for extending the cultivation.

If the planters of Southern India were to import selected seed from the Blue Mountains of Jamaica the results would be much more satisfactory than starting with really wild plants. They would then start where the Jamaica people have left off.

We always take up any new species or varieties of coffee that we meet with, and we distribute plants for purposes of experiment—in fact to furnish the raw material for planters to work upon if they like. *Coffea stenophylla* is a case in point. This is very near *C. arabica* and may indeed be a wild form of it. I do not suppose, however, that planters will take the trouble to work at the wild plant for, say, twenty years in order to get an improved variety. Experiments on a small scale are worthless. *It is purely a planter's matter, to be solved only on the estates where coffee is largely grown.* [The italics are ours.—Ed.] Only one plant in ten thousand may show any characteristics of a desirable character, the same as in the sugar cane. Although some hundreds of thousands of seedling canes have been grown, only two have shown any special characters of a valuable kind.

If it is proposed to import Blue Mountain coffee seed from Jamaica, correspondence might be opened with Beresford S. Gosset, Farm Hill Coffee Plantation, Hagley Gap P. O., Jamaica. He is a reliable man who has excellent coffee fields.

BEES AND THE FERTILIZATION OF THE COFFEE BLOSSOM.

ON submitting the notes that appeared in our last issue on this subject to a local scientist whose opinion is much valued by the planters of the neighbourhood, we have received the following interesting communication:—

"I know very little about bees, but I should imagine a coffee estate is about the last place to find them in large numbers for the following reasons:—

1. The coffee plant is in flower for a very short period; and with the exception of this tree there is very little for the bee to get honey from. Even the shade trees do not flower, I suppose, more than once in a year. It is quite possible that should there be large cliffs close to the estate or anywhere within, say, for 8 miles the rock, bees will visit the blossom.

2. As a rule sweet-scented and *white* blossoms are fertilised at night by various sorts of insects such as moths, etc., and it is quite possible that thousands of these moths are about at night near coffee estates, especially as during the flowering period we have rain.

3. I am inclined myself to think that coffee is for the most part self-fertilising. The flowers are in dense masses, so that the slightest puff of wind would blow the pollen from the anthers with the probability of this pollen catching on to one of the adjoining stigmas. Of course the question has been raised whether a coffee flower is fertilised with its own pollen or from an adjoining blossom, but I fancy that as all the blossom opens at once, and therefore stigma and anthers are ready at the same time, it is immaterial whether the

pollen drops on its own or another stigma. That a bee will fertilize only 150 flowers a day is absurd. If you will notice a bee at work on a flower or flowers with the heads close together, you will be surprised to find the ground he gets over in a short time. I should say that in the case of coffee blossom a bee will visit at least 5,000 flowers in the day. You must not forget in mentioning clover blossom that it is differently constructed from coffee blossom. The latter is an open flower and could be fertilised by any insect, whereas the clover is a pea-shaped blossom and wants a particular insect to fertilise it. It is the humble bee, not the common bee, that does this.

I trust these notes may be of some use to you, but as you will see, they are mostly surmises. To keep bees near a place, you must have lots of flowers for them to visit; if you want a list of these, I will do my best to make one up for you.

Those who still have doubts on the subject and wish to be on the safe side by encouraging bees as much as possible will find the following notes from another correspondent of interest. On a large estate the honey and wax from a considerable number of judiciously placed hives should form a welcome addition to the manager's income, so that two birds might be killed with one stone.

My plan of hiving the country bee is very simple and is as follows:—An unfrequented spot should be selected, screened by rocks, trees, etc., as they dislike being disturbed in any way. The place should be sheltered from cold winds, &c., and should, if possible, be of a southern aspect. Ordinary low country chatties make good hives with the mouth turned down, and a small hole pierced in the side near the ground, but these should be covered or the sun is apt to melt the wax, and the combs will then drop out and the bees will forsake the hive. Wooden hives are also good, but should be so made that they shall have an angular depression in the roof to accommodate the honey formation which is always most abundant at the top of the combs.

When you have the hives all ready, you should keep a look-out for the bees sent out to look for quarters. These have a habit of searching everything and everywhere, and will follow persons about, trying to get into their coat-sleeves, hats, &c., and can be captured with facility, and should then be taken to a hive and shut in and kept there for a short time and then liberated. The bee thus treated will as a rule come out and then go in again several times, and if the place is a good one will go off to the swarm and induce a number more to come over and inspect, and if their verdict is favourable, the swarm will soon arrive and take up their abode in the new quarters. This is not always necessary, as they will of themselves often take up quarters in artificial hives. The yield from a good hive, where there is abundance of flowers, will average as far as two bottles each clearing, and you can have as far as four clearings in a year, care being taken not to remove *all* the combs, or the bees will swarm off.

I think the idea of encouraging bees is a very commendable one, and planters would do well to try and keep as many hives on or near their coffee as possible. As a rule wild bees are fairly numerous, but it would be well to augment their numbers by the above or other methods. I may add that the cost of the experiment would be "almost nominal."

DEEP CULTIVATION AND ITS DANGERS.

DEEP cultivation in connection with trees fixed permanently in the ground calls for the exercise of considerable caution; for injury to the roots not only checks the growth of the trees, rendering them liable to fall easy preys to blights and diseases, but also causes a direct decline in their cropping capabilities. This has, I think, been proved beyond all question in orchards, and I believe that if we followed the practice pursued in fruit culture on the continent and England as nearly as circumstances will allow, we would be on the safe side.

We see that in the case of orchards that the thorough preparation of the ground precedes the planting of the trees. The first thing done is to thoroughly drain the

land so as to render it sweet and of an equable temperature to a considerable depth and to insure the circulation of air and water throughout it. The next thing is to dig it over to a depth of two feet, taking care not to bring any of the subsoil to the surface, as this would dilute the surface soil and render it weak. The most approved method of cultivation which follows the planting of the trees consists in digging over the land to the depth of only a few inches and manure is applied on the surface, the object aimed at being to encourage the development of fibres near the surface which are chiefly concerned in the production of fruit. J. Cheal, F.R.H.S., in his treatise on Practical Fruit Culture, says in connection with improving old orchards:— “As to improvement of the ground, and the treatment of the roots of such trees, much may be done in this direction. There are some who advocate severely cutting back the roots by digging a trench a few feet from the stems all round the trees, and filling in this trench with fresh soil. The addition of the fresh soil undoubtedly does good by supplying the tree with fresh nutriment; but by cutting back the roots in the way named, I consider that as much harm as good is done by it, and the tree is considerably checked in growth for one or two years. A better plan is to dig the surface round the trees for a space of 6 or 8 feet from the stem, *but on no account let this digging be too deeply done.* (The italics are mine.) Merely turn over the turf, if there is grass below the trees, to a depth of 3 or 4 inches, the object being not to disturb or cut away any of the roots, but to feed, strengthen, and encourage them. The mere opening of the soil, and allowing the sun and air to penetrate, is in itself of some advantage, but it should be followed up by the application of suitable manure on the surface. This will encourage the formation of fresh fibres, which will soon result in a general improvement in the tree throughout. In some cases I have seen this digging carried out far too vigorously and too deeply, thus cutting away a great portion of fibre and smaller rootlets *which are the most valuable and in the best position of all for the production of good fruit.*” (Italics mine.) We arrive then at the conclusions:—

(1) That deep digging in the vicinity of fruit trees is hurtful by reason of its causing injury to the surface fibres and rootlets; and

(2) That the cultivation of fruit trees should be so directed as to encourage the formation of fresh fibres at the surface. I suppose it requires no argument to establish the claim of a coffee tree to be considered a fruit tree; yet I don't know. Only the other day a planter asked in the *Madras Mail* whether the coffee tree was an entomophilous tree, yet I thought its claim to be considered such had been long established. There is really no necessity for a place to be deeply dug once the ground has been thoroughly drained and prepared, for it is only the surface which is apt to get hard and requires to be broken and stirred to give free entrance to the rain water which would otherwise flow over the land. Once the water enters, the air follows and keeps the land thoroughly aerated. I may show by an illustration how the surface soil can become hard without the under soil, once it has been

thoroughly drained and prepared, becoming consolidated. Every one is acquainted with rammed earth walls. In order that these should be a success, it is necessary that a little earth at a time be filled into the mould boards and pounded thoroughly all the way up till the boards are filled. If on the contrary the boards were filled to the top at once and rammed at the top, it does not matter however much they may be rammed, the few inches at the top becomes consolidated while the rest is soft and crumbly. It is the same with soil that has been thoroughly prepared except that as there is less pressure put upon it, the under soil can hardly become hard to anything like the same extent as in the case of the rammed earth walls.

Of course in opening a clearing it would be impossible to entirely follow the practice of orchards owing to the large areas that have to be planted; but a compromise might be entered into. Cheal recommends that in the case of large areas where pits have to be made to receive the plants, that drains should be opened out in every second row and all the pits connected by small drains with these larger ones in order to prevent them becoming so many receptacles for stagnant water. This would be an excellent plan to follow in connection with coffee or tea. Or the rows of pits might be all connected by a narrow drain of the same depth of the pits and both filled in at the bottom with rubble. A thorough drenching might follow the planting, as no injury need result to the roots of the young plants as there would be no necessity to dig close up to them. After this only superficial stirrings would be all that would be necessary. To argue that in shallow digging that the loose soil will keep the roots going for a few weeks; that it soon gets dry as dust; that the roots cannot penetrate deeply; that there is nothing to induce them; that the leaves droop and development stops, &c., is absurd; for the loosened soil at the top acts as a soil mulch which breaks the continuity of the capillary tubes to the surface, prevents the evaporation of the moisture which is brought up by capillarity from the depths below, and keeps it where it is most wanted in reach of the surface fibres.

It is also argued that deep cultivation causes the roots to go down into the subsoil in search of coolness and moisture in the hot weather. What is stated above shows there is no necessity for this. The fact is that deep cultivation in cutting away and injuring the surface fibres causes the tree to be dependent on its lower roots; but how can this be beneficial when the subsoil in all cases is poorer than the surface soil? Failure of blossom I believe is due rather to this cause and to rough clod digging. Where the surface soil is kept *finely* stirred and the development of roots fibres encouraged, failures of crop would, in my opinion, be less apt to occur. If the roots were induced by deep culture to dive into the subsoil how could the tree be possibly properly nourished? Isn't mostly all the nutriment contained in the soil? Some nitrates and lime would perhaps be recovered in this way, but the minerals would be in an unavailable form. And as for the roots going down into the subsoil in search of coolness and moisture, I believe plants flourish best when their roots are in as warm a medium as their leaves and branches.

H. G. R.

TEA.**The New Chinese Tea.**

The first trial breaks of machine-made China tea is reported on most unfavourably in "the Lane." It is said to be poor stuff and quite unlike Indian tea.

Proposed tea duty in Canada.

There are serious prospects of tea-duty being imposed in Canada, and we may therefore look for quite a spurt in imports in the next few months.

The Russian Market.

In 1894 Russia imported some 78 million pounds of China tea (34 M. leaf tea *via* Odessa, and 44 M. Brick, etc., overland). Value of the former retail is from 85 kopechs to 5 paper roubles per Russian pound, and for the latter about 2½ roubles per lb.

Ceylon estimates for 1897.

The local *Observer* estimates the yield for the year at 120 million pounds, or 15 above last year's crop. Its rival, the *Times*, falls foul of this and decries such premature forecasts, and wants to wait till the official estimate is given.

Russia as a tea-district.

There are again persistent rumours of a large extension of tea-cultivation in the Caucasus, and the importation of Chinese "tea-planters" is said to be increasing. As long as they stick to China in the matter of cultivation and manufacture, we need not trouble ourselves much about it.

Calcutta exports.

From the monthly return of the I. T. A. Clearances, dated 14th December 1896, we note that almost 8 millions more were cleared this season from Calcutta up to the end of November than at the corresponding period in 1895. The total exports from Ceylon were also nearly 8 millions in excess of last year.

Exchange samples.

In our correspondence columns "P." urges that Nilgiri Tea Planters should abandon their present ridiculous system of keeping their factories locked to all brother planters, and treating the details of manufacture as profound and valuable secrets. Free interchange of samples is a necessity, if these Hills are ever to take a higher place than the fourth rate one they now occupy. This reminds us of a planter who, when asked by a brother planter for samples for tasting, said he would only give them on payment!

The African Market.

Unless some very decided impetus be given to the Natal tea-industry, Africa will in the near future afford an outlet for Indians and Ceylons by no means to be despised. The Natal jât is good as far as regards its pedigree, but careless pruning, plucking and manufacture result in a most inferior article. The labour supply too, it must be remembered, is imported all the way from India, so that excepting the duty we have the pull all round. The 3,000 acres under cultivation are

close to the sea-coast, having an elevation of 100 to 500 feet only, with a scanty rainfall of 40 to 48 inches.

Ceylon tea prices.

In its review on the past year's prices, the *Times of Ceylon* draws attention to the unsatisfactory drop of ½d. compared with 1895 and 1894, i.e., 8¼d. against 8¾d. Added to this, the rise in exchange has helped to reduce profits all round. In fact exchange is actually 2½d. higher than it was two years ago. Certainly the Indian average of over 9d., which is probably what it will run out to, affords a striking contrast to the Ceylon 8¼d. The reason for the better prices is said to be the greater skill or attention in manufacture.

Nor is the Colombo market more satisfactory, though compared with 1891 and 1892, it shows no change, being 41 cents per lb. Last year it was however 47 cents, but this was a record. The quantities disposed of on the other hand in Colombo show a marked increase, being almost 25½ million pounds against over 9½ millions in 1891.

A retrospect and a forecast.

The season, which is now nearing its close, began exceedingly well, but latterly prices have declined steadily. Subsequently, however, says the *Grocer*, the yield of many gardens turned out disappointingly as regards the quality, which showed a marked falling off from the character of the invoices imported at the opening sales, so that since then the demand at times has perceptibly flagged, and prices have been more or less weak. Autumn-flavoured kinds of the better class have mostly been taken at full rates, but "Calcutta-bought" teas, as they are termed, together with low medium and commoner sorts, whether leafy or broken, below 1s. per lb., have been disposable only at a repeated decline, till they were 1d. to 2d. cheaper than at the starting point. Though the results financially may not have been entirely satisfactory to importers, the cheapening of the article has had the salutary effect of greatly stimulating consumption, as is evidenced by the heavy quantities that pass out of the bonded warehouses every week; and the duty-paid entries on this description of tea in the United Kingdom for the first ten months of the year, as officially stated, amounted to 99,732,168lb., against 93,844,535lb. in 1895, and 95,994,441lb. in the corresponding period of 1894. Favourable as these facts may appear to the interests of consumers, there is still the possibility of the trade being overdone with an excessive glut of tea, and this too just when the heaviest importations from Ceylon are usually expected, which must swell the aggregate supply on offer, besides helping to establish an additional reduction in value all round. With this prospect before them, dealers and retailers generally may reckon upon having, as a benefit, a long continuance of cheap tea.

The London Market.

Referring to last week's tea sales the *Produce Markets Review* says: "Indian teas continue to be freely brought forward, and upwards of 54,500 packages were catalogued, establishing a record in quantity for one day's sale of 35,000. With such a heavy weight of tea to be dealt with it is not

surprising that there should have been some irregularity in prices, but considering the number of samples to be tasted and valued the market on the whole remains very steady. This steadiness is due to the increasing demand, which may be accounted for by the exceptional value now offered, and it is quite probable that the consumption for the season will materially out-distance any previous one. The Medium, Whole, and Broken Pekoes have fallen to a point which induces the retailers to use them in their blends more liberally than ever, and with the present favourable conditions the consumption will doubtless continue on a large scale. It seems evident from a recent estimate of the crop that there is no probability of any advance in values such as was the case in the early part of this year, as the supply is ample to meet any reasonable increase in the consumption. In the lower grades of both whole and broken leaf an improved business has been transacted, many of the teas showing better quality, of which buyers are taking advantage. The better descriptions are more plentiful, but in consequence of the good demand for them values remain steady, while for the finest sorts the market is very firm, the quantity on offer being moderate. Of the 54,997 packages offered at the public sales 48,000 sold, and a good portion of the balance has since been disposed of privately. The demand for Ceylon tea continues good, and the larger supplies brought forward at the public sales on Tuesday met with ready buyers at firm rates generally. For all good and fine descriptions values are comparatively steady, with an occasional slight decline in Broken Pekoes worth about 11d to 1s, and in teas with good appearance but giving a thin infusion. The finest grades of both whole and broken leaf keep firm at about late rates, which will probably be maintained, as the proportion is likely to show some diminution later on. Common broken descriptions have displayed a somewhat easier tendency, but similar grades of leafy teas are unchanged, and good Pekoes from 6½d. to 7½d. are still difficult to obtain. At the public scales 27,500 packages were offered, of which about 2,500 were withdrawn. The shipments from Ceylon to the United Kingdom to the 17th instant amounted to 80,925,879lb., against 73,319 507lb. to the same date last year, or an increase of 7,606,372lb.

DISTRICT ASSOCIATIONS.

WYNAAD.

PROCEEDINGS of a General Meeting held at the Club, Meppadi, 2nd December 1896. Mr. C. E. Abbot in the Chair.

PRESENT.—Messrs. C. E. Abbott, De Fonblanque, R. Lamb, D. Mackenzie, W. Mackinlay, J. R. Malcolm, A. Trollope, and B. Malcolm, *Ag. Hon. Secretary*.

I. U. P. A. S. I.—

(1) *Mr. Hockin's Expenses*.—Read letter from Mr. Hockin dated Nov. 23/96 and *Ag. Honorary Secretary's* reply.

(2) Read copies of Mr. Hockin's letters to the Secretary, U. P. A., and Mr. Hockin's letter of Nov. 26th referring to them.

(3) Read circular from the letter Secretary, U. P. A., *re* Trust, fund subscription lists. Recorded.

(4) Read Confidential circular letter from Secretary, U. P. A. Recorded.

(5) Read circular letter from Secretary, U. P. A., having reference to the resolution of the Shevaroy Planters' Association *re* the adul-

teration of coffee, and the formation of a Coffee Association for the prevention thereof. Also the Chairman U. P. A.'s letter on the subject. Recorded.

(6) This Association agrees with the Chairman, U. P. A., that the present is not the time to move in the matter.

(7) Read letter from the Secretary U. P. A. in reply to the *Ag. Honorary Secretary's* letter of Nov. 7th *re* extra subscription for 1895-96. Recorded.

2. *Import Duties*.—Read letter from the Secretary U. P. A. asking for statistics required by the Govt. of Madras regarding the quantity of artificial manures used in the district during the past 10 years.

Resolved that the Coast Firms be requested to supply the information and that the *Ag. Honorary Secretary* be instructed to write to them on the matter.

3. *Cutcherry at Meppadi*.—Read the *Ag. Honorary Secretary's* letter to the Collector of Malabar, and his reply, stating that the 2nd class Magistrate will be requested to hold Cutcherry at Meppadi on the 2nd Monday & Tuesday in each month.

Recorded with satisfaction.

4. *Coffee Robbery*.—Read *Ag. Honorary Secretary's* letter to the Superintendent Police regarding Police arrangements for this season. Recorded.

5. *Roads*.—Resolved that the *Ag. Honorary Secretary* be instructed to write to the Collector of Malabar to ascertain what steps have been taken with regard to H. E. The Governor's reply to the Deputation.

6. *Agenda Paper*.—This matter was postponed until the Annual General Meeting.

7. *Hon. Secretary*.—This Association receives with regret Mr. Hockin's announcement of his resignation as *Hon. Secretary* of this Association and hope he will reconsider his decision.

Papers on the Table.

Proceedings of Genl. Meeting, Palney Planters' Assn. Sept. 2/96

" of Genl. Meeting, Shevaroy " " Oct. 12/96.

" Committee " " " Nov. 2/96.

" Ceylon Planters' Assn. for year ending Feby. 17/96.

Planting Opinion November 21/96.

A vote of thanks to the Chair terminated the proceedings.

(Sd.) C. E. ABBOTT,

Chairman.

(„) BERNARD MALCOLM,

Ag. Honorary Secretary.

The Annual General Meeting of this Association will be held at the Club, Meppadi, on Wednesday, January 6th, 1897.

ROUND THE BUNGALOW.

NOTES BY A PLANTER'S WIFE.

A novel twine box. A novel way of utilizing Patent Barley or Cornflour tins is to make twine boxes of them, which is easily and quickly done in the following manner. Take a ball of Macranie thread, or two balls of different colours, say willow green and rose colour, and work in stripes of the two colours; with a medium size bone crochet hook make 6 chain and join in a ring; into this ring work 10 double crochet, which completes the first round: 2nd round, work 2 double crochet into the first double crochet of last round, inserting the hook to take up the two front threads of the stitches of last row; * 1 double crochet into the next stitch, 2 into the next stitch, repeat from * until the end of the row.

3rd row same as 2nd.

4th row 1 double crochet into the first 4 stitches of the 3rd row * 2 double crochet into 5th stitch, 1 double crochet into each of the next 4 stitches, repeat from * until end of row.

5th row. 1 double crochet in each of the first three stitches of the last row, * 2 double crochet into each of next three stitches, repeat from * until end of row.

6th row, same as 5th, and fasten off; this will now look like a small round mat and will fit the top of a Patent Barley tin; now a plain piece of crochet will be required for going round the sides of the tin which must be worked in the following manner: make a chain

of 44 stitches and one extra for turning into each of the 44 stitches, a double crochet must be worked, and to turn, one chain must be made at the end of each row—about 20 rows of this plain crochet will be required, but it will be better to measure the depth of the tin and work until it is the right width, as it much depends upon the worker as to whether she works tightly or not; it should be worked pretty tightly, otherwise the tin will show through. Now fasten off the plain piece of crochet, and with a coarse needle or bodkin sew the plain piece to the round top first made; the easiest way of doing this is to place the round piece on the top of the tin and the plain piece round it, when it can be pulled to make it fit nicely and then stitched round the edge, lastly sewing it down the side of the tin; this is of course the wrong side of the cover, so it must be taken off, and a small strap of crochet must now be made with 8 chain, turn and make 1 double crochet into each chain, repeat 3 times, fasten off and stitch it on the tin cover about half way down; this is for holding a small pair of scissors, or instead of a crochet strap, a strap of ribbon might be used. Next make a small pin-cushion, say diamond, or any other shape preferred, in the following way: cut two pieces of thin card board $2\frac{1}{2}$ " long in the desired shape, cover each side with silk, velvet or sateen and sew them together very neatly round the edge, put a small loop of ribbon at one end, and stick both black and white pins round the edge; stitch the loop to the top edge of the crochet cover: now take the tin and make a hole at the top for the twine to come through, pull the twine also through the top of the crochet cover, pull the cover over the tin, place a pair of small scissors in the strap, and you will have a pretty little string box which will be of both use and ornament on either a lady's or gentleman's writing table.

An old frame made new.

Thoroughly cleanse any old gilt or wooden frames you may wish to renovate, scrape away all roughness, and proceed to paint all over the front and sides with a coat of size. Upon this sprinkle some grains of rice or sago, allowing them to lie fairly thick, and, when perfectly dry and set, proceed to wash over all some good gold paint. Two coats will probably be necessary, but great care must be taken that the first coat is absolutely dry before the second is applied. When complete, the frame so renovated will present a charming and very uncommon appearance, more especially if sago be used instead of rice, as this grain is rough and gives a rustic appearance to the surface upon which it is used.

To purify water.

It is not generally known that pounded alum possesses the property of purifying water. A tablespoonful of pulverised alum sprinkled into a hog-head of water (the water to be stirred at the time) will, after the lapse of a few hours, by precipitating to the bottom the impure particles, so purify it that it will be found to possess nearly the freshness and clearness of the finest spring water. A pailful containing four gallons may be purified by a single teaspoonful.

Be careful with canned foods.

I read the following the other day, and think it should prove useful to numbers in India who have in a great measure to depend upon canned goods:

In buying canned goods, an eminent physician's instructions are to "reject every article that does not show the line of rosin round the edge of the solder of the cap, the same as is seen on the seam on the side of the can. Reject every can that does not have the name of the manufacturer or firm upon it, as well as the name of the company or town where manufactured." Standards have all this; when the wholesale dealer is ashamed to have his name on the goods, fight shy of him. Press up the bottom of the can. If decomposition is beginning, the tin will rattle the same as the bottom of the oiler of your sewing machine will do. If the goods are sound, it will be solid, and there will be no rattle in the tin. Reject every tin that shows any sign of rust around the cap on the inside of the head of the can. If house-keepers are educated on these points, then the muriae of zinc amalgam will become a thing of the past.

Maypole soap.

This wonderful soap is most useful to all wearers of the blouse; by it white blouses, dresses, underlinen, children's frocks, etc., etc., may be dyed any colour one wishes, or faded colours restored, by simply washing the faded articles with this soap. I have never seen it advertised out here, so wrote to the manufacturers in England, asking if it was procurable in India; to this they have replied that it is procurable from Messrs. J. B. Foster & Co., Chemists, South Parade, Bangalore;

also Messrs. Whiteaway, Laidlaw & Co., Calcutta. I have seen some lace washed with this soap, which looks lovely.

THE MAN WHO KNOWS THE ROAD.

He drives directly home, even in dark nights, does the man who knows the road. The over-hanging gloom, the deceptive shadows, the uncertain sounds, don't bother him. He can feel the ground under his waggon wheels, and the "lay of the land" is open to him as at clear noontide. It is the stranger in those parts who is confused and befuddled, who knocks people up to ask questions, who finally lodges in the ditch.

Where to go, and how to get there; what to do, and how to do it—why, the man who knows that comes to the front everywhere and always. But the opposite—the waste of time, money, power, health, &c., in blind experiments, how disheartening and disastrous it is! Take an illustration of this sort, and you will see how it fits in a minute.

"In the spring of 1892," says a lady who lives down near the east coast, "I began to feel ill. I had a poor appetite, and after everything I ate, no matter how simple it was, I was seized with great pain across the chest and around the sides. I was frequently sick, vomiting a sour, bitter fluid. I was almost afraid to eat, and my food gave me no strength. In this state I continued, now a bit better, and then worse until December, 1893, when I became very ill. I got so weak I could hardly bear the weight of my body on my feet. *I tried this and I tried that—all kinds of medicines I heard of, but none of them gave me any relief.*

"In January, 1895, I read in a little book about the cures done by Mother Seigel's Syrup. The book contained letters from people who had been cured, some of whom had suffered like me. I got a bottle from Miss Caroline Foster, grocer and draper, High Street, in this place. After taking it I was much better. I had a new relish for food, and no more distress after eating. I continued taking Mother Seigel's Syrup, and was soon free from all pain and sickness and fast gaining strength. Since then I have been in the best of health, and needed no medicine. (Signed) Mrs. Eleanor Clay, Messingham, Brigg, Lines, April 30th, 1895."

"In the early part of 1875," writes another, "my health began to fail me. I felt low and weak, and lost all power and disposition to exert myself. After every meal I had pain in the chest and all over me. I felt so tight around the waist that it seemed as though something was holding me. I was much troubled with a sickening wind coming up from my stomach; and now and then I belched up a sour fluid that bit my throat and half choked me. Then, too, I had attacks of spasms, which gave me intense pain. I got about my work slowly and in much distress, and grew gradually weaker and more despondent in mind. *I tried all the various medicines I could hear of that might possibly be good for me, but none of them were of any avail.*

"After five tedious years of suffering, my daughter, who is in service in London, wrote me of the benefit her mistress has derived from the use of Mother Seigel's Curative Syrup when troubled much as I was. I replied, and my daughter sent me two bottles of the Syrup, and after having taken it, I felt quite like a new woman. I had no pain after eating, and was in better health than I had been in since I was first taken ill. From that time onwards my health was good, and if I ail anything temporarily, as the best of us will, a few doses of Mother Seigel's Syrup put me right. I have told many persons of what this now celebrated remedy did for me, and am willing you should publish my statement if you desire to do so. (Signed) (Mrs.) Ann Knight, near the Church, Fenny Compton, Leamington, September 27th, 1895."

By looking back to the italicised words in these letters the reader will catch my point on the instant. Both these ladies, not knowing the true remedy for their disease (indigestion and dyspepsia), blindly experimented with anything they could get hold of. Under like circumstances we all do the same. When one doesn't know the road he is almost certain to blunder and stumble; and he can't know until he learns. Now, in all ailments of the digestion, with the local symptoms which proceed from it, Mother Seigel's Syrup is, so to put it, the *right road*. Follow it faithfully, and you are fairly sure to bring up in the pleasant shelter of good health. Knowing this, direct your neighbours.

MARKET SUPPLEMENT.

SATURDAY, JANUARY 9, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (Dec. 18, 1896) says:—Small supplies were offered this week in auction, but the market has been dull and values show no material change.

No East India was offered.

The catalogues consisted chiefly of Central American, which met a slow demand at about previous rates.

In consequence of the Christmas holidays Public Sales are suspended from to-day until 6th January 1897. Fluctuations in the "Terme" market have been unimportant during the past week, and at the close quotations show a decline of 6d to 1/- since our last.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending December 16th, 1896, says:—The Bank rate remains at 4%. Bombay Exchange closes at 1s 3½d. Brazil Exchange 9½d. Rupee paper 3½% 62½. Silver 30d per oz.

This market remains quiet, the demand at auction continues dull for all kinds, except finest which is very scarce. The first shipment of New Crop Plantation Ceylon realized very full prices, viz. 123s for bold colory, 111s 6d for first size, 106s for smaller, and 130s for peaberry. Brazil markets continue steady.

Daily receipts have averaged 11,125 bags in Rio, and 14,125 bags in Santos.

Futures have been less active, and have shown a declining tendency, the close being weak at a decline of 1s to 1s 6d, viz.:—Good average Santos in Havre, December delivery closes at fcs. 60.00, in Hamburg pf. 50½, and No. 7 low ordinary Rio in New York \$9.30.

To-day's London official quotations are:—

	Dec.	March	May	Sept.
Rio	48/-	48/3	48/3	—
SANTOS	50/-	50/-	50/6	51/3

We quote:—

Ceylon, mid to good mid. 104/ @ 115/	Costa Rica, mid. to fine... 93/ @ 107/
Do. small to low mid. 87/ „ 102/	Do. ord. to low mid. ... 77/ „ 91/
East India, mid. to good mid. 97/ „ 106/	Jamaica, good to fine ord. 71/ „ 80/
Do. small to low mid. 87/ „ 94/	Do. greenish to fine colory... 88/ „ 122/
Guatemala, mid. to fine... 92/ „ 105/	African ... 43/ „ 45/
Do. good ord. to low mid... 74/ „ 91/	Columbian, ordinary ... 66/ „ 71/
Salvador, good ord. foxy greenish... 72/ „ 73/	Do. good ord. to low mid... 72/ „ 91/
	Do. mid. to fine ... 92/ „ 105/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
Rio	2,014,000	1,450,000	1,350,000
SANTOS	3,403,000	2,334,000	2,576,000
	5,417,000	3,684,000	3,926,000

Auctions:—

22 casks and tierces 7 barrels and bags Plantation Ceylon	@ 94/6 @ 123/
26 bags East India in second hands bought in.	„ 63/ „ 89/6
174 barrels 67 bags Jamaica	„ 91/ „ 103/
18 bags Costa Rica	„ 70/6 „ —
12 bags Nicaragua	„ 82/6 „ 90/
63 bags Guatemala	„ 93/ „ —
118 bags Mexican, part sold	„ 64/ „ 100/
3,068 bags Columbian, chiefly sold	„ 55/6 „ 62/
108 bags Guayaquil, part sold	„ 80/6 „ 97/
43 bags Peruvian bought in.	„ 58/ „ —
525 bags Nyasaland	
16 bags Ceylon Liberian bought in.	
32 bags Travancore Liberian	
229 half-bales Mocha bought in.	

On Quay Terms:—

749 bags Santos, part sold	@ 55/ @ 59/
Landed last week 642 tons. Deliveries 369 tons. Stock 8,344 tons	
Do. last year 360 „ „ 390 „	8,207 „

THE UNITED STATES.

	1st December.	1896.	1895.
Stock	25,180 tons	29,650 tons	
Afloat	22,700 „	13,060 „	
Visible Supply	47,880 tons	42,710 tons	

	Value No 7	9½ cents	14½ cents
	November.	1st Jan. to 30th November.	
Imports	1896. 30,760 tons	1895. 22,880 tons	240,680 tons
Deliveries	26,180 „	20,180 „	243,540 „

BRAZIL.

	Stocks 30th November.	1896.	1895.
Rio	380,000 bags	221,000 bags	
Santos	707,000 „	403,000 „	
Total	63,940 tons	36,710 tons	

Receipts 1st July to 1st December, 1896.

Rio	1,871,000 bags
Santos	3,143,000 „

Exported 1st July to 30th November.

	1896.	1895.
Rio to Europe	440,000 bags	400,000 bags
„ the States, &c.	1,070,000 „	765,000 „

Total from Rio ... 1,510,000 bags 1,165,000 bags

Santos to Europe	1,930,000 bags	1,290,000 bags
„ the States	645,000 „	475,000 „

Total from Santos ... 2,575,000 bags 1,765,000 bags

LONDON.

Quotations 1st December.

	1896.	1895.
Middling Plantation Ceylon	102/	97/6
Fair channel Rio, floating terms	46/	66/
Good channel do	48/	70/
Good average Santos do	47/	69/

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of December 18th, 1896, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1896-1897...933,919 packages.	630,834 packages.	23,471 packages.	
1895-1896...904,728 „	550,179 „	31,062 „	
40,641 pkgs. INDIAN	Total 65,766 packages were offered in public auction this week.		
24,253 „ CEYLON			
872 „ JAVA			

Imports, Deliveries and Stocks of Tea for the whole of the United Kingdom are shown below, as given by the Custom House returns. Being based on actual figures instead of estimated weights, these statistics are very useful for comparative purposes.

SUPPLEMENT TO PLANTING OPINION.

Movements of Tea in United Kingdom from 1st June to 30th Nov., as shown by Custom House Returns.

	IMPORTS.			HOME CONSUMPTION.			EXPORTS.		
	1896.	1895.	1894.	1896.	1895.	1894.	1896.	1895.	1894.
BRITISH E. INDIES ...	83,380,561	77,579,434	75,509,480	59,037,906	58,285,529	56,167,407	2,148,517	1,992,095	1,723,733
CEYLON ...	48,979,548	42,363,961	38,007,688	44,220,752	41,125,438	39,194,305	4,251,695	3,780,377	2,703,965
CHINA ...	27,162,844	29,792,143	33,313,293	10,391,846	12,127,276	11,189,153	10,330,978	9,307,057	11,831,151
OTHER COUNTRIES ...	3,067,277	4,674,327	3,295,132	2,855,872	2,371,116	1,769,966	510,865	565,838	484,128
TOTAL lbs. ...	162,590,230	154,409,865	150,125,593	116,416,376	113,909,359	108,320,831	17,242,055	15,645,367	16,742,977

Stock of all Tea in United Kingdom on 30th November :—lbs. 1896. 100,150,244 1895. lbs. 96,113,813 1894. lbs. 93,496,127

Indian. The week's sale comprised only 40,641 packages, against 54,977 last week. Teas from Assam and Dooars are now coming in of better quality, and where liquors showed any improvement the market readily responded, with the result that prices were more satisfactory. For Teas without special point, buyers evinced little desire to purchase, even at the low rates recently current, and here and there the market showed decided weakness, although the present range of prices for good useful liquoring Teas, as well as the poorer grades, stands upon an unusually moderate basis, some of the Teas being as cheap as they have ever been. Reuter's telegram from Calcutta gives exports to U. K. from 1st May to middle of December as 110,620,000 lbs., against 103,730,000 lbs. The official wire from the Indian Tea Association gives exports to U. K. from 1st April to middle of December as 113,000,000 lbs., against 106,000,000 lbs. to same date last season.

Week's av. Tea sold on Garden Account, 1896, 32,347 pks., av. 8½d. 1895, 36,818 pks., av. 9d. 1894, 13,333 pks., av. 10d.

	1896.		1895.	
	Pkgs.	Price.	Pkgs.	Price.
Assam ...	15,437 p	9½	18,662 p	10½
Cachar and Sylhet ...	7,909 p	7	12,036 p	7¼
Chota Nagpore ...	—	—	—	—
Darjeeling ...	1,579 p	1/	1,184 p	10½
Dooars ...	6,267 p	7	3,467 p	7
Kangra Valley, &c. ...	50 p	6¾	80	6
Neilgherry ...	91 p	10¼	—	—
Terai ...	305 p	7¾	696	7½
Travancore ...	709 p	6¾	520 p	6¾

Comparative prices of Indian Tea in London :—

	1896.	1895.	1894.	1893.
DUST. (Fair ordinary, dark liquor) ...	4¼d	4¼d	4¼d	5d
FANNINGS. (Red to brown, strong rough liquor) ...	4¼d	4¼d	5¼d	5¼d
BROKEN TEA. (Brownish to blackish, strong liquor) ...	6¼d	6d	7d	6¼d
PEK. SOUG. (Blackish greyish, useful liquor). ...	6¼d	6¼d	8d	6¼d
PEKOE. (Greyish to blackish, some tip, useful liquor) ...	7¼d	7¼d	9d	7¼d
PEK. SOUG. (Blackish greyish, inferior liquor). ...	4¼d	5¼d	6¼d	5¼d
PEKOE. (Blackish greyish, some tip, inferior liquor) ...	5¼d	5¼d	7¼d	6¼d

Ceylon. Auctions comprised 24,253 packages against 27,553 last week. The market was fairly active for most descriptions, although, among the poorest liquoring Teas a further slight fall was here and there noticeable, probably owing in a great measure to the low prices ruling for Indian Teas of this class. For other grades the market was inclined to be slightly irregular, and medium liquoring Broken were here and there rather depressed. Private telegraphic advice gives the exports to the United Kingdom for the first half of the month as 2,800,000 lbs. and estimates the quantity for the whole month at 8,500,000 lbs. Average for week rather over 8¼d. against 9d. for same period last year.

Comparative prices of Ceylon Tea in London :—

	1896.	1895.	1894.	1893.
PEKOE SOUG. (Ordinary leaf; fair liquor) ...	6¼d	6¼d	7¼d	6¼d
PEKOE (Ordinary leaf, little twist; fair liquor) ...	7¼d	7¼d	8¼d	8¼d
PEKOE SOUG. (Rather bold leaf; indifferent liquor) ...	4¾d	5¼d	6¼d	5¼d
PEKOE (Somewhat bold leaf; indifferent liquor) ...	5¼d	6d	7d	6¼d

Java. The 872 packages consisted of Teas of direct import, the market ruling steady. 108 packages from "Perbawatee" realized an average of 1/- per lb., and 108 packages from "Goalpara" 11¼d. per lb.

PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8½d.) December 18th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry ...	91 p	10¼												
Dunsandale ...	37½c	4¾	7½c	5½	5½c	5	2¼c	5	23½c	4½				
Glendale ...	24½c	1/1½	24½c	1/1½										
Non Such ...	30½c	1/2	30½c+1	1/1½+1/	2¼									
Travancore ...	709 p	9¾												
Ashley ...	50	5½			31	5	19	6¼						
Bison Valley ...	50	5½			32	5	18	6½						
Bon Ami ...	303	7¾			79	6¼+6¼	153	8+8¾	17	5½			54	7½+8
Penshurst ...	187 p	6¾	43	10¼	114	5¾ 6					16	5¼	14½c	5¼
Riviera ...	39 p	5½			15	4¾		21½c	6½				3½c	4¼
Rockwood ...	80 p	5½			48	5 5¼		30½c	6½				2	4¼

Note.—† signifies that the lot was withdrawn.

ADDISON & CO.,

Printers, Stationers, Bookbinders, Booksellers, &c.

	RS.	A.		RS.	A.
Estate Check Rolls	6	0	Chesterman's Metallic Tapes, best quality, 50 ft.,		
Pocket do.	1	0	Rs. 7-0 ; 100 ft....	10	8
Faber's Office Pencils, H. B. & B. soft and medium),			Sill's Flexible Blotter (the best hand blotter known).	3	0
per doz.	0	8	Addison & Co.'s London-made Blue-black Ink, qts.	1	8
Faber's American Rubber Bands, per box, 10 as.,			Stephen's Blue-black (Copying or Writing), quarts...	2	4
14 as., Re. 1-4 &	4	8	Do. do. pints...	1	8
Faber's Ink and Pencil Erasers	0	6	Do. Violet-black Copying ... quarts...	2	8
Penholders, per doz., 5 as. to	3	0	Do. do. pints...	1	8
Pocket Memo. Books, 7 x 4½, limp cloth, leather			Field's Non-corrosive Black Ink ... quarts...	3	0
backs 8 as. to	1	0	Do. do. do. ... half-pints...	1	2
Pocket Cash Books, do. 8 as. to	1	0	Field's Treble-strength Copying Ink half-pints...	1	2
Letter Clips ... 4 as., 6 as., 8 as., 12 as. &	1	0	McNiven and Cameron's, Mitchell's, G. Brandauer's,		
Superior White or Pink Blotting Papers, per quire,			Gillott's, Perry's, and Walter & Co.'s (Centric)		
Rs. 2-0 to	3	0	pens in small and gross boxes ...from 7 as. to	3	8

Pocket Books, Note Books, Wallets, Cash Books, Ledgers, Journals,
Minute Books, &c., in large variety.

Any description of Estate printing and binding work neatly
and promptly executed.

CLOCKS & TIMEPIECES.

	RS.	A.		RS.	A.
"Bee" Timepiece, nickel	3	6	12-inch Drop Octagon Clocks, pendulum, nicely-		
Do. gilt	3	12	finished, and very good timekeeper ...	23	0
"Princess" Timepiece, one day, 3½" dial, nickel ...	3	4	12-inch Octagonal Lever Clocks, do. ...	27	0
"Princess," 8-day, 4" dial	10	0	Gothic Pendulum Clocks, 5" dial ...	19	8
"Princess," one-day, alarm	5	4	Enamelled Iron Clocks, with fancy or plain dials,		
Fancy Timepieces, one day, in bronze, nickel, and			from Rs. 26-0 to	40	0
porcelain from Rs. 4-4 to	16	0			

All Clocks regulated before despatch.

STATIONERY OF EVERY DESCRIPTION. DIE SINKING AND STAMPING IN THE BEST STYLE

ADDISON & CO., MADRAS.

PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, JANUARY 23, 1897.

[No. 2.]

MANAGER'S NOTICE.

Back Numbers Wanted: One each of Nos. 16, 27, 29 and 30, at one rupee per copy, or exchanged as below.

Offered in exchange or at eight annas per copy Nos. 2, 3, 5, 7, 9, 10, 13, 18, 19, 20, 21, 22, 23, 26, 28, 31, 32 and 33.

N.B.—It is particularly requested that the names and addresses of the *senders* be legibly written on the covers of the papers despatched.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 5th February 1897.

Wynaad.

MEPPADI, 11th January 1897.—*Weather* has been fine for the past fortnight. Cold and bracing. Good for man and coffee bush trees. *Crops* have been coming in faster and are approaching completion. Outturns up to the average as a rule. *Plant-diseases.*—Leaf disease beginning to pass off; had a bad attack this year. Coffee grown through it better than usual. *General Health.*—Usual lung complaints owing to cold weather.

North Wynaad.

MANANTODDY, 19th January 1897.—*Weather.*—The season continued hot until 9th inst., when first cold weather set in. Thermometer 56° at 6 A.M. There has been no rain this January to date, beyond a very few drops on 18th. *Crops.*—Coffee picking finished in some parts of "Bamboo." Paddy nearly all in. *Plant-diseases.*—The cold, misty nights and mornings and sea-breezes have had a most excellent effect on the coffee. *General Health.*—Fairly good. *Grain.*—Pretty cheap.

Nilgiris.

SHOLUR, 17th January 1897.—No rain since last report and no frost: highest and lowest temperature between 6 A.M. and 6 P.M., 39° and 68°. Tea still flashing, but leaf very light. I note your correspondent's remarks in your last issue. A comparison between Ootacamund and Sholur reports shows a difference only of 3 inches in rainfall, and the number of days on which rain fell is identical (though Ooty being higher has had frost which Sholur escaped), so I imagine Sholur reports may be taken as representing the N. E. corner of the plateau. Ragi 24 seers per rupee and labour plentiful and health good.

KOTAGIRI, 21st January 1897.—*Weather.*—Fine and cold, but no frost to speak of so far; heavy dew at night on the coffee. *Crop* at low elevation nearly all in, stripping and pruning commenced; outturn has not improved, one estate that got in 60 tons last year barely shows 45 this year on the same amount of cherry gathered in, another shows 460 bushels parchment out of 2,200 bushels picked, with cut bean and light thrown in, making up the wretched outturn of about 10 bushels parchment, cut bean and light for 38 bushels cherry; this is low down where last year's rain aggregated only 10" to the end of August. Other estates higher up run $\frac{1}{2}$ and $\frac{1}{2}$ and are giving fair crops. Spike low down is already far forward; there is rain in the air and an early blossom is expected. An old planter reports his best crop resulted from a February blossom; labour has moved in more freely since that blessed "Nomb's pandy" (Pongul) which played the mischief with field work all last week. Grain rates still unjustifiably high this side.

GENERAL NOTES AND ARTICLES.

PLANTING STATISTICS.

In a recent leaderette under this heading, the *Madras Mail* remarks with satisfaction that a beginning has at last been made in the collection of statistics relating to the planting industry. In noticing our "Planting Directory"—by the way we delayed sending copies for review till our revised summary was out—our contemporary incidentally

PHELPS & CO., Fashionable Tailors and Costumiers, 16, Old Court House Street, Calcutta. (Ladies' Department: 4, Russell Street.)

says that the figures given by us are "rather more complete" than those furnished in the Appendix to the third Annual Report of the U. P. A. S. I. That this opinion is borne out strongly by facts will be shown by the following table of comparison, taking only the figures for coffee, and omitting fractions of hundreds for the sake of clearness:—

	U. P. A. S. I.	PLANTING DIRECTORY.
Mysore	... 12,900 acres	24,500 acres.
Wynaad	... Nil.	8,800 "
Coorg	... 8,500 "	18,800 "
Nilgiris	... Nil.	10,800 "
Travancore	... 4,100 "	3,500 "
Pulnies	... 2,500 "	2,000 "
Nelliampatties	... 3,700 "	4,100 "
Shevaroyes	... Nil.	2,400 "
Total	... 31,700 "	74,900 "

By the above comparison we do not intend to cast any invidious reflections on either the Secretary to the U. P. A. S. I., who, we understand, is proving a decided acquisition, or the Honorary Secretaries of the District Associations. The former can only work through the latter, and the latter, with the best intentions, are powerless without the aid of the individual members of their Associations. The greatest delinquents, who furnish no statistics at all, are the districts of the Nilgiris, Wynaad, Shevaroyes and South Mysore. And indeed we ourselves have no great cause for congratulation in the matter of furnishing complete statistics, seeing that while estimating the total coffee area in South India at the round figure of 300,000 acres, we can only give details of under 75,000! It must be noted here, nevertheless, that quite half the total acreage is in the hands of natives, from whom very little if anything can be obtained in the way of furnishing returns. There is yet a vast deal to be done in the collection of accurate returns of acreage, and while the planting industry may rejoice itself in the fact that a beginning has at last been made, it must be remembered that it is only a beginning.

The last page of the Appendix of the U. P. A. Report contains some very interesting figures, though very incomplete we regret to say, on the different rates of wages, grain and so on. We extract the following:—

DAILY PAY AND COMMISSION, &c.

	Men.	Women.	Children.	Commission.	Advances.
	A.	A. P.	A.		
Coorg	4	2 6	1 to 2	10 to 15%.	Tamils Rs. 5 to 10; Canarese Rs. 15 to 20
Mysore, South	4	2 to 3	...	...	Rs. 10 to 20
Nelliampatties	5	3 0	2 0	10%	" 5
Lower Pulnies	4	2 6	1 to 2	10%	" 5
Travancore, Central.	4	...	...	3½p. per head.	Men Rs. 10; Women Rs. 6.
" North...	4½	2 0	...	5p. per head if over 50% are women and children. Otherwise 10	Rs. 10
Wynaad	4	2 8	...	10	...

In the contract works, rates differ very widely. Take for

instance weeding. In the Nelliampatties it is as high as Rs. 18 per acre per annum, while in the Lower Pulnies it is only Rs. 3 per annum, while on the Kannan Devans it runs to say Rs. 6 per annum.

The prices given for grain are hopelessly confusing for purposes of comparison, as the unit, the seer, differs greatly in every district. It would effect a useful purpose if the rates were given in weight in English pounds; at present they are quite useless. Lastly we must draw attention to the very commendable idea of furnishing details of crops of the different products. At present the returns are lamentably incomplete, but such as they are, are most interesting. On the Nelliampatties, we note the average yield of coffee is said to be about 3 cwt. per acre, while on the Lower Pulnies the yield runs out to slightly under 2 cwt. per acre, though it must be noted that almost half of the individual returns in this case are marked as "uncertain, probably considerably underestimated." In Central Travancore the average works out to a little over 1½ cwt. per acre. No figures are given for the other districts.

The only figures relating to tea yields are from Travancore. The Central District, with a probable yield of slightly under 1½ million pounds, averages 390 lbs. per acre for tea over two years; and South Travancore shows a yield of 360 lbs. per acre, or say about 2 million pounds.

We may conclude by quoting the rough figures given in our Directory. Therein we assume the total plantation area to be about 650,000 acres, of which 324,500 are cultivated, with coffee (300,900), tea (18,000), and cinchona (6,500). We estimate Mysore at 143,030 acres of coffee, Coorg at 84,000, Nilgiris and Wynaad at 48,000, Shevaroyes at 11,000, Travancore at 6,000, Nelliampatties at 5,000 and the Pulnies at 3,000. Of the 18,000 acres of tea we have reckoned that Travancore has about 10,000 acres, the Nilgiris 6,500 and the Wynaad about 1,500 (the figures for the latter district will probably be 3,000 acres at least by the end of the next planting season).

Planting Companies.

During the past year there has been a great rush in floating tea and coffee planting companies, new capital to the extent of 7½ million sterling being sought for.

Teosinte.

This fodder appears to be a most valuable one, and one which should be tried instead of guinea grass. No damage need be feared from either pigs or porcupines, who leave it severely alone, though they will attack Indian corn, oats, wheat, barley, &c., for the grain. The seed affords a valuable food for poultry, who eat it readily, despite its great hardness. We shall be glad to procure seed and give details of cultivation if desired.

The field manure factory.

This is how a Yankee reckons out the value of a yearly crop of lucerne. Its nitrogen is equal to 1,750 lbs. nitrate of soda, its phosphoric acid to that in 600 lbs. bone-black superphosphate, and in potash to that in 1,200 lbs. muriate of potash. In America this would cost about 124 dollars, but in India it reckons out roughly to Rs. 300,

PHELPS & CO., Calcutta, have probably the largest and best assorted stock of Woollens in India and will be pleased to send patterns and form of self-measurement.

BILLET REGISTER.

ANY subscriber wishing to secure a billet, or desirous of a better one, or in want of a manager, assistant, or writer, &c., is entitled to insert an advertisement to that effect free for as long a period as desired. These advertisements will appear on this page. Non-subscribers will be charged the small fee of one rupee.

To be worked in conjunction with the above, we have established a register, and names will be entered on application, together with copies of their testimonials. Thus should any enquiries be made for the services of a manager, assistant, &c., the names and testimonials will at once be forwarded, saving delay and trouble. Subscribers may have their names entered free; others will be charged a fee of one rupee.

BILLETS OFFERED TO

A Surveyor Of 25 years' experience, trained in the Imperial Survey Department of India and Engineering College, Roorkee, is prepared to undertake extensive Trigonometrical, Topographical and Engineering Surveys and Levelling and make working plans on the largest scale at somewhat the same rates as the Government Cadastral Surveys which will vary with the area and scale of the survey and amount of detail required.

Full particulars on application to

A. HALL,
C/o Editor.

Three.

Field Overseers. Field Overseers from November 1896 in opening new clearing. Salary Rs. 20 to 25 per mensem. Natives only need apply.

Apply to A. H. SHARP, Esq.,
Devikulam.

Coffee Writer. Wanted on a Coffee Estate an Under-Writer who understands field work and accounts. Must be young, active, and willing. Must speak and write English well.

A labour connection is necessary. No one without these qualifications need apply. Good salary.

M. A. T., C/o this paper.

BILLETS WANTED BY

Young Tea Planters. Wanted position of Trust or Assistant on a Tea or Coffee Estate in S. India. Has had two years' experience in Assam. Is willing to work 6 months without a salary till he has learnt local conditions. Good references.

"A. K.,"
C/o Editor.

u. c.

Tea or Fruit. Wanted an appointment as Manager or First Assistant in tea or fruit. Ten years' practical experience, well up in the cultivation and manufacture of tea, and also in the management of English fruit trees. Bachelor, age 29, active, hard working, sober habits, excellent testimonials and information from the Manager of this paper. Can join at once.

KUMA,

By Young Planter. Wanted a billet on Coffee Estate by young planter of three years' experience under well-known planters. Excellent testimonials.

"ROCHESTER,"

Three.

C/o Editor.

Young Coffee Planter.

Wanted by a young planter, charge of a Coffee Estate. Experienced in all branches. Salary Rs. 200.

"D. D.,"

Three.

C/o Manager.

Coffee Planter.

Wanted a situation in Coffee as Superintendent or Manager by a European with over twenty years' experience.

Apply D.,

u. c.

C/o Manager.

Superintendent.

Wanted a billet as Superintendent of a Coffee Estate by a planter of 14 years' experience; testimonials and references given if required.

Apply PADDY,

u. c.

C/o this paper.

Tea Planter.

In 5 to 6 months time by a Managing Proprietor about to sell property, an appointment as Superintendent of a Tea Estate or a large tea house preferred. Mincing Lane and Assam experience. Command of Labour.

Apply T.,

C/o this paper.

SHORT ADVERTISEMENTS.**NOTICE.**

THE cost to subscribers of short advertisements is One Rupee for every three insertions of five lines or less. To non-subscribers a charge of Two Rupees will be made.

N. B.—Advertisers should state exactly the number of insertions required, failing this the advertisement will continue running until stopped and will be charged for accordingly.

OFFERED.

Coffee Seed extraordinary.

After two years' careful investigation I have been able (by a process which I shall not, for obvious reasons, divulge) to produce a coffee seed containing the very excellent percentage of 7 per cent. of ash with the parchment, and 3.71 without, as compared with 2.6 per cent. of ash with and without parchment of the ordinary seed. The analysis was made by Mr D. Hooper, of Ootacamund. Price Rupees Fifty per bushel, cash with order.

L. W. GREY,

u. c.

Pykara, Nilgiris.

Wooden Bungalow, &c. FOR SALE.—A wooden bungalow containing a quantity of weather boarding, rafters, door frames, window frames, doors, windows, &c.
Two Iron water-wheels. A quantity of powdered sulphur.
A cash chest.

u. c. Apply P. GUARD,
Cherambadi P. O., Wynaad.

Attakhan Cadoo Estate. FOR SALE.—Attakhan Cadoo Estate, Coffee 100 acres, Jungle 87.

u. c. Apply L. A. WAUGH,
Verurajendrapett, L. Coorg.

Camera, &c. FOR SALE.—One time and instantaneous Hand Camera, R. R. lens, and complete outfit, almost new.

One 450 bore G. A. Pistol in case with implements.
One large Shikar knife.
One lady's saddle with Scott's patent safety stirrup.
Everything in perfect order.

u. c. Apply "B B B" C/o Manager.

Rifle. FOR SALE.—450 Express, mail canvas case, re loading and re-sizing Tools and some ammunition. In perfect order.

u. c. Apply 303, MANAGER, *Planting Opinion.*

THE LABORATORY,

OOTACAMUND,

D. HOOPER, F.C.S., F.I.C., *February 20th, 1896.*

Quinologist to the Government of Madras.

A. BROWN, Esq.,
Podanur.

Tannery Refuse. This is to certify that I have analysed a sample of "Tannery Refuse," received on the 7th February 1896, and find it to contain

Moisture	...	...	8 80
*Organic matter	...	...	69 84
Lime as carbonate	...	...	9 23
Potash salts	...	...	1 20
Magnesia, &c...	...	...	2 47
Sand	...	...	8 46
			100 00

*Containing nitrogen ... 3 43
[Equal to ammonia ... 4 83]

This analysis of "Tannery Refuse" shows a great improvement on samples called by this name that have passed through my hands. The ammonia is much higher than it was in the last specimen, and the mineral constituents are well distributed. I consider this substance a very useful fertiliser.

D. HOOPER.

Price Rs. 20 per ton delivered in neat bags in Calicut, and slightly cheaper at Mettapalayam.
Two.

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Five Vols. "Boys' Own Paper" (1889-94), in good order. Price Rs. 20; offered considered.

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FOR SALE.—Handsome bay Persian pony cob, sturdy and well bred, 4 years 13-3, believed sound. A superb saddle nag, with snaffle mouth and if trained to harness would make a grand trapper. Price Rs. 500.

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FOR SALE Rs. 6,000.—A newly-built brick Mangalore Tiled Bungalow, in about 50 acres of land, suitable for fruit growing or coffee cultivation under shade. Rainfall 80 inches. Only 3 miles from Taluk Headquarters, Govt. Dispensary and Post and Telegraph Office. A good road leading to bungalow only ½ mile off Government Road.

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Bangalore Orchard.

FOR SALE £500 STERLING.—An orchard in good order within Civil and Military Station, Bangalore, S. India, in a seven-acre block. Water available; containing a nice strongly-built 8-roomed Cottage, with large outhouses and stabling for 3 horses.

Estimated annual rental value £18. Fruit and other crop returns £18 per annum.

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A lady living at the seaside, in the healthiest part of County Cheshire, with her three daughters, who have had highest certificated education, are willing to receive and educate English children, either boys or girls, any age up to 12 years.

A thorough knowledge of English, French, German, Music, Drawing, Dancing imparted to the pupils.

Young and delicate children most conscientiously looked after.

Terms and particulars on application to

Z. Z., C/o Manager.

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SOUTH COAST OF ENGLAND.

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The Rev. Frank R. Burrows, M. A. Trinity College, Oxford, receives Boys to prepare for Public Schools and Royal Navy. Ages 7 to 14. High and healthy situation, home comforts. Terms 50 to 70 guineas per annum. References kindly permitted to, and particulars to be had from, C. A. Martin Esq., LL D., Darjeeling, and Lt.-Col. G. C. Dobbs, I.S.C., Commissary-General, Bengal Command, Naini Tal.

There are so many cheap imitations of Ellwood's helmets in the market that it is a comfort to know that
PHELPS & CO. keep Ellwood's only.

including the cost of carriage to the estate. How's that for cheap?

A correction.

In our last issue we published an extract from the *Nilgiri News* under the heading of "Fibre in the Wynaad," stating that Mr. H. Punnett was making extensive arrangements for planting sisal hemp at Pundalur, on behalf of an English Company. This, we learn, is utterly without foundation, and we much regret having given currency to the report.

The United Association.

We have to acknowledge with thanks a copy of the third Annual Report of the Proceedings of the United Planters' Association of Southern India. Like its predecessors it is excellently got up, while a clear and useful index affords ready reference to the many subjects of interest contained therein. The whole book reflects much credit on the new Secretary, Mr. Ormerod. Some useful tables of statistics, to which we refer elsewhere, form a new and very welcome departure.

Nilgiri cinchona.

Our worthy contemporary, the *Nilgiri News*, seems to have gone slightly astray in a recent note on the cinchona bark off Devashola estate. An esteemed correspondent, in drawing our attention to the matter, says: "I see in the *Nilgiri News* a para. stating that some Deva Sholah bark recently gave 6% (of quinine) by analysis. In the first place such a yield must be incorrect. And the value which is stated to be 5½ as. per lb. at present market price is incorrect. At ½d. per unit it would only be worth 3d. per lb., which would be a fraction over 3 as. You might point out this mistake, which is misleading."

Thatch-grasses.

In our issue of December 19th we gave an interesting extract on Thatch-grasses, which omitted, however, mentioning the very essential detail of thoroughly treading out and drying the grasses before thatching. Another point, says a correspondent to a contemporary, is that it should be cut as near the ground as possible, and all ferns, creepers, etc., should be cleared out of the grass. Carefully cut at the proper time, and the works of treatment and thatching well and carefully done, the result should be a thatch that will last for years.

Flies on cattle.

The following remedy is given in the *Scientific American* for flies on cattle: Coal tar one part, oil and grease one part each; mix with a small amount of carbolic acid. Apply with a cloth, and it will drive off every fly, and last ten days or more in dry weather. Any kind of old lard or grease can be used. This remedy is equally effective as a lice exterminator on poultry, and is used for painting the sides and roosts of the fowl-house. For a hen and young chickens saturate a cloth and place it in the bottom of a box, and put the hen and chickens in the box for an hour or so.

Kola.

There is just now quite a boom in this valuable product, not in price, but in popularity for planting. Brazil, Ecuador and British Guiana planters are determined to give it a thorough trial. The crop, it must be remembered, is a very clean and simple one to handle. Nothing beyond picking and curing is wanted, the nut is just packed in kola leaves and

shipped right off. No pulping, curing or manufacture of any kind. The great obstacle to the "million" cultivating a taste for kola has been the want of a palatable preparation which might be taken instead of tea or coffee. This Mr. Thos. Christy claims has been done by his "neo-kola," and foresees a time when coffee and tea will have a powerful rival in kola.

The Annamalais.

We publish elsewhere a recent G. O. on the opening of this district, which is most satisfactory as showing the thoroughly sympathetic attitude of the present Government towards the planting industry. It will be noted that the chief points of interest are as follows:—That the enhanced rate of Rs. 2 per acre will only apply to half instead of four-fifths of the holding. That an extension up to the 31st of March is allowed the original applicants to complete their selections. That the main road will be constructed as soon as ever it is possible and that the trace of the road shall be published. And lastly that only plantation products, such as coffee, tea, cocoa or cinchona, may be planted.

Indian coolies for America.

A Ceylon planter, Mr. Maitland-Kirwan, who has considerable planting interests elsewhere than in the Island; on behalf of various states in Central America (including Honduras, where he represents a new and large coffee interest) will pay a visit to the authorities in Calcutta for the supply of Indian coolies. In times of famine like the present, the good resulting from emigration is undoubtedly immense, and we heartily wish Mr. Kirwan all success. The demand for cheap labour in South America is practically unlimited, but it is altogether another question whether the individual States will be able to guarantee that treatment which the Government of India very rightly demands.

New commercial plants.

All planters and horticulturists in India who are enterprising enough to experiment in new products, will find a good list of plants to select from in Messrs. William Brothers' catalogue for 1896-97. As frontispiece a coloured illustration of a wonderful 12 fruited pine apple is shown, and within is a list of very nearly every plant suited for tropical agriculture. In most cases there is in addition a paragraph or more to each different product, giving useful information of all sorts. We propose printing a few extracts in a future issue for the benefit of our readers, though it will only take a 3 pie postcard to obtain the catalogue itself from William and Co, Heneratgoda, Ceylon.

The Papaw Carrica Papaya.

No. 31 of 1896 of the *Agricultural Ledger* Series contains some interesting information on the digestive qualities of the juice of this plant. Briefly it may be said that the medical profession look upon it with scant favour, as careful tests seem to have established its inferiority compared to pepsin, its older rival. This is confirmed by a London Market Report we noticed recently stating that the demand for papain (the vegetable digestive ferment of the papaw) is strictly limited, and that but little enquiry is shown for the article. The Continental

trade is brisker. The writer in the *Agricultural Ledger*, however, does not fail to point out that as pepsin, being an animal ferment, cannot be generally used for the Natives of India, it is quite possible that the vegetable papain might be of extreme use in this country for all diseases where an artificial ferment is deemed necessary.

The Ganjam labour district.

In obtaining labour for Native States from the neighbouring districts, there is a constant and very real danger of their deserting *en bloc* at the first opportunity. Why not try going a little further afield, and getting the labour from such a distance as would deter them from making their way back without their expenses being paid and some sort of protection given them *en route*? Now take Ganjam. This district is largely visited by Assam planters and their contractors, the labour traffic being large and constant, both "free" and indentured. Recruitment is easy enough of course, but the chief difficulty lies in transportation. Probably the most satisfactory of all means would be to ship on a coasting steamer and land them on the West Coast. Being then in a strange land, marching them up the ghats would be no very difficult matter, and once on the estate few would care to risk the loss of their passage back to their homes by the chance of a successful desertion. If agreements could be made with each individual cooly for, say, a couple of years work, some success might be achieved this way, and the expense would not be greater than at present.

The Assam famine.

The famine in this district was thought at first to have its bright side for planters, in the matter of inducing a larger supply of labourers to come forward than usual. In spite, however, of the very grave scarcity both in Assam itself and in those districts of the Central and North-West Provinces, whence a large proportion of its indentured labour comes from, so far there has been very little observed of the expected movement. On the other hand there has already commenced that serious loss on rice, which grain planters under the special labour laws in force are bound to supply at a fixed minimum price. This provision of a benevolent Government is undoubtedly a wise one in the interests of the labourers, but acts with peculiar hardships on their employers. In good years, when rates of grain are cheaper than the price planters are prepared to sell, coolies naturally obtain their supplies elsewhere. Hence in good seasons there is always a certain loss owing to a proportion of the stored rice going bad. In times of scarcity there is, on the other hand, a tremendous rush on the plantation grain-godowns, and the planter of course suffers a heavy loss in being forced to buy in a dear market and to sell in a cheap one.

Kerosine as an insecticide.

Professor H. E. Weed, writing of the value of kerosine for insect-infected plants, says that it can be used against all insects except those living in confined places where they cannot be reached, such as tomato worms, those living in stored grain, etc. The amount of kerosine which should be used will vary with the kind of insect to be treated, some requiring a much larger proportion than others.

Nearly all plants will bear one part of kerosine to ten of water, but when a stronger application is to be made, it should first be tested on a few plants to see if the foliage is affected. For the treatment of ordinary insects the following proportions are recommended: Plant-lice of all kind, 1-20. Caterpillars or other larvæ exposed on leaves, 1-15. Scale insects on leaves, 1-10. Scale insects on bark, summer treatment, 2-10. Scale insects on bark, winter treatment, 3-10. Lice on domestic animals, except hogs, 3-10. Lice on hogs and ticks on cattle, 5-10. The mixing of the two liquids takes place partially in the pump, but more largely in the nozzle, where they are divided into very fine particles. Of course a mixture made in this way is not a permanent one, nor is it necessary that it should be so. What is needed is simply a dilution of the kerosine, so that it will not cause injury when applied, and the attachment accomplishes this object fully.

Fresh versus old manure.

From the interesting note below it will be seen that it is far more economical to apply cattle manure in its fresh state, than to wait until it is in its "best condition," or as planters put it more graphically, till "it cuts like butter." Over a half of the money value of the manure is wholly lost, if application is delayed. Unfortunately, however, unless the present deep pit system is given up the loss from the fermentation of the fresh manure would counterbalance a large part of the gain; and added to this there is the extra expense perhaps of weeding, due to the seeds not being killed. If we might suggest a method that could be perhaps safely and advantageously tried on steep land, we would advise broadcasting the manure round the trees, and covering lightly with earth. This again necessitates extra care in drainage to prevent wash:—

As the result of experimental tests made at Ottawa Experimental Farms (Canada) last year, it was shown that 8,000lbs. of cow and horse manure (equal quantities of each), placed under shelter from rain and turned and weighed once a month, was reduced in weight between March and December to 2,600lbs.; at the end of four months it was in "best condition," and weighed 3,480lbs. During eight years of experiments on crops it appears that the action of fresh manure on crops is equal, ton for ton, to that of rotted manure. This bears out the opinions of several farmers that it would be most economical to cast out and plough under lightly all manure as soon as made. The objection to this would be that the field would be fouled with undigested seeds.

The trade of Ceylon.

The following figures from the local *Observer* regarding the trade of Ceylon will be of interest. Dessicated cocoanut, though not shown in the list, is a staple of increasing importance, the increase over last year's exports being as much as 300%.

The coffee crop on the other hand was three times smaller than last year's, while tea shows an increase of nearly 10½ millions, roughly 10%.

	1896	1895	Increase or decrease.
Tea lb.	108,141,412	97,939,871	10,201,541 in
Coffee cwt.	22,747	63,920	41,173 de
Cocoa cwt.	31,366	27,420	3,946 in
Cinchona lb.	1,309,560	921,085	388,475 in
Cardamoms lb.	452,595	374,635	77,960 in
Cocoanut oil cwt.	343,497	384,140	40,343 de
Plumbago cwt.	340,491	334,921	5,571 in

They have no pretensions to cheapness, nor do they advance any such claims, but PHELPS & C understand their business.

A Level. FOR SALE.—A level by Troughton and Simms, in case, with tripod and levelling staves. Complete and in good order. Price Rs. 300. Open to a reasonable offer.

Five. Apply "AJAX,"
C/o EDITOR, *Planting Opinion*.

Coffee Estate. FOR SALE.—A valuable Coffee Estate, in a good district, 100 acres in bearing, 25 young, 55 acres now being opened, 300 acres forest.

u.c. Apply EL. L.,
C/o Editor.

Tea land, &c. Tea land at high elevation, also coffee land, for sale, or partnership to open. Particulars to

u.c. T. C.,
Editor of this Paper.

Eucalyptus Preparations. Eucalyptus Boiler Disincrustator at 12 annas per gallon in 40 gallon barrels. Eucalyptus Oil at 3/8 per 27 oz. bottle. Apply T. BROWN,
"Glendale," Coonoor.

Coffee Land. FOR SALE. A BARGAIN.—A block of 210 acres of good Coffee Land in the Nilgiri District, planted with 20,000 4-year old coffee trees. No difficulty about labour. Grazing plentiful. Manure 1 a. per bushel delivered.

u.c. Apply to "BARGAIN,"
C/o Editor, P. O.

Saddle. FOR SALE.—A good saddle and bridle by Parsons, St. Martin's Lane. Used only once—imported last year. Can be seen at Mr. Lexevich's Agency, Bangalore.

u.c. PERCY W. WOOLLEY,
Nellacottah.

Good Land. FOR SALE.—Block of 1,000 acres, situated in the best district of Wynaad for the early showers; average annual rainfall 80 inches, with an average in January, February and March of over 5 inches.

Government Road from Coast to Mysore bisects the Property which is moreover bounded on the North and West by large rivers, each containing ample power throughout the year to drive Overshot Water Wheels.

The greater portion of the land faces North, North-East, and North-West, with a very easy lay, and the soil is admirably fitted for the growth of Arabica and Liberian Coffee, as well as of Tea. For further details apply to '303, C/o MANAGER, *Planting Opinion*.

u.c. **Coffee Land.** FOR SALE.—On easy terms, a block of 1,000 Acres of land in Wynaad, suitable for Tea.

Apply "SOUTH,"
C/o Manager, this paper.

WANTED.

Letter Press. Wanted a second-hand screw letter press, in good order. State price delivered at Railway Station to

u. c. PRESS,
C/o This Paper.

No. 15 Am willing to pay One Rupee for
"Planting Opinion." a copy of this issue.

u. c. "NUMBER FIFTEEN,"
C/o Manager.

Tea Estates. WANTED to purchase a couple of good tea estates. Send full particulars to T. T. LEONARD, 4, Gordon Avenue, Bangalore.

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Papers and Magazines. WANTED.—Back Numbers of the following Magazines:
Chambers' Journal.—FIFTH SERIES—Vol. I. complete, bound or unbound (embracing Nos. 1 to 12 inclusive).

Offered 1 Re. each for any of the following Back Numbers:—
Chambers' Journal.—Odd Nos., 45, 63, 64, 65, 74, 76, 94, 95 & 96.
All the Year Round.—Part No. 47 (Nov. '92). Jan. to June (incl.) '93.
Cassell's Family Mag.—Monthly part for Jan: '93.
Family Herald, " " " Feb. '94.
The Young Man, " " " Sept. & Oct. '94.
Also Aug. & Sept. '93.

Offer 8 annas each for the following:—
The Planter.—Nos. 8 to 16 inclusive of Vol. IV.
Exchange for any of above—copy for copy or at 1/ each.
Boy's Own Paper.—Parts No. 160, 163 & 170 to 176 (inclusive).
Chambers' Journal.—No. 87 (fifth series).
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Rhea Seed Wanted. Rhea—Boehmeria Nivea—seed to produce six million plants. Write when able to supply and state price; also percentage guaranteed to germinate, to JOHN B. COOK, Hereford, Shencottah, Travancore.

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Skins. Wanted Tiger and Leopard Skins complete with skull and claws.

u. c. Apply J. HENRY & CO.,
Calcutta.

RUBBER STAMPS,

BRASS SEALS FOR WAX SEALING,
MONOGRAM, CREST OR ADDRESS DIES,
ENGRAVING OF ANY DESCRIPTION.

ADDISON & CO., MADRAS.

There are firms who are unscrupulous enough to advertise their Tailoring at cost price, but
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ESTATE REQUISITES.

ck. Approximate Analyses of these can be had on application.

Quotations will be obtained and orders booked for Basic Slag or Phosphate, Kainit Salts, Muriate of Potash, Nitrate of Potash, Sulphate Potash, Saltpetre, Superphosphates of Lime, 15% Phosphoric Acid, Superphosphates 40%, Soluble Phosphates, and any other Manures not kept stock. Approximate Analyses of these can be had on application.

As to the distribution of our great staple, *tea*, we have the following main facts:—

	In 1896.	1895.	Increase.
	lb.	lb.	lb.
United Kingdom	93,936,361	85,753,339	8,183,022
Australasia	11,062,832	9,379,561	1,683,271
America	718,600	398,527	325,073
Rest of World	2,423,619	2,413,444	10,175

The great increase has been to the United Kingdom; but nearly 1½ million lb. additional to the Australasian Colonies is very good, and also the 325,000 lb. of increase to America, although, of course, a good deal re-exported from London, should be these added to figures.

Basic slag.

Some time ago a valued correspondent asserted that the cost of this "permanent manure" was such as to render it unable to compete with other phosphatic manures, such as bones or superphosphates. We presume that the valuation was based on its percentage of phosphoric acid, but it appears that this by no means wholly represents its manurial value. The lime it contains, according to Mr. F. J. Lloyd, a well-known analytical chemist, is in such a form as do great service in rendering soluble inert forms of soil nitrogen. It is on this that depends its principal value as a manure, unlike superphosphate. This difference may account for variations in comparative trials of superphosphate and basic slag, which have often puzzled observers by their apparent contradictions. Where there is plenty of nitrogen in a soil in a form fit for plants, superphosphate is usually more efficacious than basic slag; but if there be a deficiency of available nitrogen the converse result is likely to be shown. If this theory be proved beyond dispute it will follow that slag must be regarded as a nitrogen-exhausting manure when used freely without any nitrogenous accompaniment. A French chemist, whose remarks on the subject, received by Mr. Lloyd since he broached it recently at a meeting of the London Farmers' Club, has made some experiments to determine the question, and he states that he found that slag converted the inert nitrogen in humus (organic matter in the soil) first into ammonia and next into nitrates, in which forms it is readily assimilable by plants.

Jadoo fibre.

Colonel Halford Thompson writes to the *Madras Mail* under date the 24th December:—My attention has been called to a letter signed "Toda" which appeared recently in the *Madras Mail*, upon the use of Jadoo Fibre for Coffee Plantations. The writer appears to have got hopelessly confused in his calculations from the fact that three separate and distinct uses are mentioned in the Jadoo circular as applicable to coffee growing, and he has taken the quantity of Jadoo required for a seed bed large enough to raise 450 seedlings at a time, (but which could be used again and again so that 20,000 seedlings could be raised from it,) as the basis of a calculation based upon the original 450 seedlings being the whole quantity that could be raised out of that amount of Jadoo. It is needless to say that this calculation is utterly incorrect, though not so incorrect as another calculation, where he takes the amount of Jadoo recommended for encouraging fresh roots in old trees, which once put down would retain its effect for years, as the basis of an argument by which he attempts to prove that "supplies" of Jadoo would cost 9 annas per plant.

Perhaps, however, the better way will be for me to state

to the best of my ability what the cost of using Jadoo Fibre really would be; and for this purpose I will take the cost delivered at the coffee estate at the same figure as given by "Toda," viz., Rs. 170 a ton, though it is difficult to conceive how £7-10-0 per ton at Madras (now reduced to £7) could by any means swell to Rs. 170. However, taking it at Rs. 170, the amount of Jadoo required for raising seedlings in beds to supply 50 acres would be certainly not more than 5 cwt. and would therefore cost Rs. 42-8 instead of Rs. 1,650, as calculated by "Toda"; and this could probably be reduced one-half by using mixed Jadoo and earth for the seed bed. On transplanting from the seed bed, whether the seedlings be put into a basket or transplanted to ground prepared with Jadoo, the quantity used would be the same, viz., one ton of Jadoo would raise 3,640 coffee plants or thereabouts.

This calculation, which has been worked out from figures supplied by Mr. Pilkington of Koppa Estate, Kadur, and checked by him, is on the basis of half filling the baskets when they are used (putting the Jadoo at the bottom) or putting it at the bottom of the trench if baskets are not used. This would therefore cost about 9 pies for each plant, instead of 9 annas as calculated by "Toda." In point of fact he has just multiplied the cost by 12. It will be a great advantage to the growth of the plant if when permanently planting it out, a small quantity of Jadoo be put at the bottom of the hole in which it is planted, but as this is not absolutely necessary, I shall not here go into the cost of doing this.

One word in conclusion as to the advantages of using Jadoo (which is in no sense a *forcing* medium, as "Toda" seems to think). The result of using Jadoo as described above is an increase of fibrous root action, forming a strong healthy plant, which will stand the vicissitudes of climate much better than others not grown in it; and it is for this reason that many tons of it are now being sent to France to "grow on" the young vines. Were it in any way to "force" the plants grown in it, it would be useless for the purpose. It is only fair to "Toda" to say that he has evidently been misled by the wording of the first circular issued in Madras, which I confess was not as clear as it might have been.

EXPERIMENTAL GARDENS.

(Communicated.)

THERE are many such gardens in India. But the existing ones are widely scattered, in addition to having special or local functions to fulfil. In our opinion, therefore, there is still ample room for the formation of new gardens, especially of the class referred to in the heading of this paper.

Starting with the Royal Botanic Gardens of Calcutta, which are purely botanical and scientific, there are many public gardens distributed over the land, possessing mixed or special functions, bearing on the science and practice of horticulture, teaching of botany, acclimatization of plants, experimental cultivation and not infrequently the general improvement of sanitation and public taste.

Such gardens are maintained in India by the Imperial

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Government, Native States, Societies, Municipalities, communities, companies and even private individuals, so that there can be no question as to their utility for the public good. It is admitted, therefore, that the existing gardens of the country are mostly doing excellent work within their respective spheres, while a few of them have carried their influence far beyond the limits of this land.

But except the Calcutta institution, which is the oldest and best supported in the country, the formations of nearly all the other gardens, in whatever locality or however maintained, are of a more or less mixed nature. Most of the Government gardens, as also the gardens of Agri-Horticultural Societies, are of a pseudo-botanical character. But it is well known that the work chiefly done by them is horticultural, decorative, experimental and commercial.

In one or two instances, in the north, these gardens may be said to be wholly commercial, to the extinction of private enterprize in the localities where they are placed. Under the assumption of carrying on useful experiments, the Government affects to be justified in maintaining a few institutions of this class, even at the risk of handicapping free trade! This is on a par with what is done in jails, and it appears to us that Government would do well to relinquish such monopolies in favor of private enterprizes. Some of the gardens in Native States are well equipped, and spread their useful influence far and wide. Nursery and market gardens are rapidly increasing in some parts of the country, which is a healthy sign. But at present there is a dearth of purely experimental gardens, worked independently of the Government lines. It is with special reference to the latter class of institutions that we venture to offer a few suggestions.

With rapidly improving facilities for easy export by land and water, the commercial aspect of India is daily improving, therefore anything which is calculated to increase or improve the natural products of the country should arrest earnest attention. In this connection we have said before, and here repeat the assertion, that the Arabian coffee-bean is capable of much improvement. But this desirable result is not likely to be brought about until the whole treatment of the species is conducted on a more scientific and methodical basis than at present, and by the formation of one or more experimental gardens for this and kindred objects.

There can be no question as to who should take the lead in a work of this kind. It is the proper work of Planters' Associations, and in this part of the country the United Association of Southern India should certainly take the lead. Being of a purely experimental nature, mostly with a remunerative product in a suitable locality, such a garden could easily be made more than self-supporting. For example, half the land allotted for experiment could be cropped with coffee in the usual manner, the proceeds from the latter being utilised to cover outlay on the experimental plot also. But should the remunerative portion be found to interfere with the experimental work in an adjoining field, which is very probable, it should be isolated from the latter. Another plan for maintaining an experimental garden would be to levy a small annual contribution on the actual outturn of each estate. By raising such a fund, the Association would possibly have fuller control in

administering the scheme, the details of which might be left to a Select Committee. The persons who would have executive charge of the garden should not only possess special qualifications for experimental work in connection with the growth and crossing of plants, but they should also be expected to cooperate with other experts who are in a position to help in a scientific work aiming at the improvement of natural products such as tea and coffee.

We would not advocate a large garden, but it should be well placed and fully equipped for carrying on experiments with delicacy and judgment. The performance, as also the registering of experiments, would require to be entirely in the hands of a few trustworthy Europeans, presumably planters who are thoroughly versed in such work, assisted by a skilled gardener. Fifty acres of land, supervised by such a staff, and having a small permanent establishment of coolies for rough work, would be ample at first. Gentlemen of the Executive Committee who are ballotted to act as visitors to the garden and advisers in the management, would not expect to be paid a salary for services rendered to the whole planting interest. But it is only right that a yearly bonus should be allowed in such cases, if only to meet travelling and other incidental expenses.

It is difficult to state even the approximate cost of such a garden until it has been fairly started. But for an area of fifty acres, the annual cost of maintenance might be roughly estimated as follows:—

*Estimate for working an experimental garden of 50 acres
for the improvement of coffee and allied products.*

	per annum.
1. Wages of a whole time European gardener @ Rs. 200 per mensem	Rs. 2,400
2. Bonuses to 3 members of the Executive Committee who would visit the garden and give personal help @ Rs. 600 each	1,800
3. Office charges with clerk	500
4. Permanent labour including draught cattle	2,400
5. Manures	1,000
6. Contingencies	400
Total	Rs. 8,500

PRUNINGS AND DISEASE GERMS.

THE subject, "Finger and Toe in Turnips," of the extract we give below from a home paper may at first sight appear to be of little interest to us, the connection between diseased turnips and unhealthy plantation products not being very obvious. Yet a little thought will clearly establish the similarity of the two cases. In coffee and tea, the prunings are allowed to either rot on the ground, or else are buried in branches or pits on the field, and with coffee moreover the pulp itself is very generally if not invariably used to supplement the usually scanty supplies of bulk. The disease germs and pupæ of insect blights find a natural resting place in such matter, and with coffee pulp especially is this likely to be the case. Allowing this disease laden matter to either remain among the trees, or to be specially carried back again, is in all probability therefore simply encouraging a recurrence of the disease. In the case of the turnips instanced below, it was clearly proved that the scrapings of *even sound* turnips applied to the soil as a manure for a succeeding crop of roots, had an extraordinary effect in producing the dreaded

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disease in an otherwise healthy crop. In bringing the matter to the notice of his brother planters, Mr. James Westland of Ceylon goes so far as to say that in the old coffee days of 1871, he remembers well that the fields manured with coffee pulp, in conjunction with pig manure and bone dust, were the first to go when attacked by leaf disease. We ourselves have noticed in one or two cases that the coffee adjoining the pulp house usually seemed to be suffering more acutely from leaf than fields some distance off.

This is clearly a matter of the greatest importance, and is well worthy of scientific investigation. We would suggest that the first step be to send samples of coffee pulp in various stages of decomposition either to Dr. Watts, Reporter on Economical Products to the Government of India, Calcutta, or to Mr. Cotes, of the Calcutta Museum. A microscopical examination would soon reveal the presence of the disease germs, if existent. The next step, if as we strongly suspect the germs were discovered to be present, would be to discover the best methods of destroying them, either by burning the pulp by means of a cheaply built brick incinerator, which we consider the most perfect method, or by some other perhaps equally satisfactory manner by which the valuable humus might be preserved.

With regard to the pruning either of tea or of coffee, we do not think there need be any investigation at all, the matter being so very clear. As soon as a field is pruned, before the leaves have even begun to dry, the prunings should be diligently collected and burnt. It will be objected that we have not taken into account the dead and presumably disease-laden leaves that fall to the ground every day of the year. Surely these also, exclaim the dissentients, should be removed and burnt, or otherwise how can the disease be done away with? As this is manifestly impossible, they conclude there is no use in bothering about the matter at all. But we do not claim that our methods are perfect, nor that diseases will thereby be extirpated. Yet that the severity of their attacks will be greatly reduced, we think is more than probable. We only advocate the practical, and it is ridiculous to condemn a system because it does not attain theoretical perfection. Cultivation and manuring of all kinds would be condemned on the same grounds, for though they do some good, they might do a great deal more.

A final objection, and a very practical one, is the one of cost. Will such methods pay? Well, considering that in both coffee and tea expense of collection and burning would certainly not exceed five rupees per acre per annum, it is obvious that a very small increase of crop would repay such outlay. On the other hand there is the loss of humus which would result from the decay of the prunings on, or in, the soil. We have always been such staunch upholders of the doctrine of preserving humus in every possible way, that it goes somewhat against the grain to have to dismiss this objection summarily. Plant food is a very good thing, but if such food be diseased and unsound, it is wiser far to destroy it. There is an extraordinary similarity between the various functions of animal and plant life. Though the dangers of reasoning by analogy are very great, yet in nine cases out of ten it may be taken for granted that we are perfectly safe in applying the broad laws that govern animal life to the vegetable kingdom.

But why should the prunings be wasted altogether? It may well be possible that some use may be made thereof, that is as far as the leaves are concerned. Taking coffee, which is the most unpromising of the two, first. Coffee leaves contain an appreciable amount of caffein, for which there is a large demand at home. Though we do not dream of suggesting that caffein factories be established in the coffee districts, yet there are, we believe, very simple methods extant of preparing decoction of the leaves. This extract, which might be dried to further reduce bulk, could be sent home cheaply enough. At all events, the subject is well worthy of investigation. With regard to tea, concentrated decoctions of theine might similarly be prepared. Better still would it be to try and manufacture a rough grade of tea, suitable for consumption by the natives of India. The majority of the leaf being hard and brittle, it would be naturally impossible to effect anything approaching a wither, and rolling would be more in the nature of crushing into powder than anything else. Yet a liberal application of water might help matters somewhat, and a species of fermentation set up. We venture to say that such tea would find a ready market at a figure considerably over the cost of production.

Interesting as this subject undoubtedly is, it is straying from our subject, and we will finally allow our readers to peruse the extract on which the above somewhat lengthy remarks are based:—

FINGER-AND-TOE IN TURNIPS:

A DISCOVERY.

(*Aberdeen Free Press*, 27th Nov.)

What seems to be rather an important fact for agriculturists has just been brought to light by Mr. William Sim, naturalist, Fyvie. It deals with finger-and-toe in turnips. About a year ago Mr. Sim's attention was drawn by a neighbouring farmer to a rather remarkable case of cankered roots. Across a field of perfectly healthy bulbs was a wide strip of very diseased turnips. On inquiry it was found that when the field had been in lea, three years previously, several cart-loads of scrapings and refuse of the turnip shed had been spread over the lea as top dressing. At the same time, Mr. Sim discovered that a turnip drill which he had himself laid down under ordinary conditions for experimental purposes on land which had not grown turnips for 25 years, showed grave symptoms of finger-and-toe. He discovered that this experimental drill had been manured with a compost containing turnip refuse. Putting the two cases together, Mr. Sim came to the conclusion that the disease was caused by the presence in the soil of turnip refuse. Now, it has long been known to farmers that the refuse of cankered roots was highly dangerous to the new crop, but it had never been taught that the turnip remains of even sound roots were a source of grave danger as well. Mr. Sim determined to put the matter to a practical test. He laid down two drills 30 inches apart, in carefully prepared soil. The first drill got the usual allowance of farmyard dung and ordinary turnip manure as sold at manure stores. The second drill received the same quantity of artificial manure, and a rich compost of turnip scrapings. The results are astounding. In the first drill 94 per cent. are splendid roots and the remainder diseased, while in the other drill the results are simply reversed, there being only five sound but very small roots in the hundred. The diseased turnips, moreover, were almost entirely useless and the remainder following fast. The presence of diseased bulbs in the first drill is evidently the result of their proximity to the noxious influence of the diseased root fibres, and had the distance between the two drills been increased, there is no doubt the first drill might have been entirely free from disease. To obviate the evils arising from the use of turnip refuse, Mr. Sim is of opinion that this refuse should be carried back to the turnip field and there laid down to be exposed to the frosts of winter and the heat of summer for five

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or six years (presuming, of course, a six or seven course rotation) until the dreaded germ has been destroyed.

THE ANNAMALAIS.

GOVERNMENT has passed the following Orders on the grant of lands for coffee cultivation on the Annamalais:—

In paragraph 5 of its Proceedings, No. 466A., dated the 3rd October, 1896, the Board urges the desirability of restricting the imposition of the enhanced rate of assessment of Rs. 2 per acre to one-half instead of four-fifths of the holding on the ground that the Orders already issued are likely to act as a stimulus towards over-clearing, the effect of which might in the Board's opinion be most disastrous. A similar modification is suggested by Messrs. Binny and Co. and the Hon'ble Mr. Hodgson. Messrs. Binny and Co., however, urge that the percentage upon which the enhanced rate is leviable should be calculated upon the land available for coffee within the holding instead of upon the whole area. As the Board points out, the adoption of this course might lead to controversies as to the extent actually cultivable with coffee. The Government therefore considers it preferable to accept the Board's recommendation in the matter and resolves in supersession of its previous Orders to direct that the enhanced rate of assessment of Rs. 2 per acre shall not be imposed upon more than 50 per cent. of each holding unless a larger proportion is actually cleared, in which case the whole amount so cleared will be chargeable with the enhanced rate. Subject to this modification, the periods within which the enhanced rate will be chargeable upon fixed proportions of the holding will remain unchanged.

In paragraph 6 of the same Proceedings the Board points out that the special list of valuable trees previously submitted to Government will not necessarily be suitable for adoption in view of the Orders contained in G. O. No. 485, Revenue, dated the 28th September, 1896. The Government will be ready to consider any recommendations which the Board may submit for the alteration of the list.

In Board's Proceedings, No. 494, dated the 23rd October, 1896, the Board concurring with the Collector recommends an extension up to the 31st of March, 1897, of the time within which selections may be made by the original applicants. For similar reasons, Messrs. Binny and Co. request an extension. The concession will be granted and the Board will be requested to intimate the fact to other applicants than Messrs. Binny and Co.

The Board has correctly interpreted paragraph 4 of G. O., No. 495, Revenue, dated 28th September 1896. It was not intended to permit cultivation of all kinds but only of plantation products, such as coffee, tea, cocoa and cinchona.

The fresh applications for land received by the Collector during the period 29th June, 1896, to 21st August, 1896, may be treated in the same manner as those mentioned in Board's Proceedings, No. 280, dated the 4th July, 1896.

The question of the direction of the main road which is designed to open up the Annamalais must be left to the Collector and his District Forest-officer who should in communication with the Public Works Officer in charge of the road arrange, as far as possible, to adopt the most convenient line. The Collector should bear in mind that the object in view is the construction of a main road along the trace which is most suitable, having regard on the one hand to the difficulties of making a road and on the other to the desirability of taking it through the heart of the country to

be opened up. The tracing and construction of the road are matters to which Government attaches great importance and must be carried out with as much expedition as possible. The special attention of the Public Works Department and of the Collector will be drawn to this matter, but the Government cannot give any positive assurance as to the date within which the road will be completed as requested by the Hon'ble Mr. Hodgson in his letter, dated the 20th October, 1896. The Government accepts the Collector's suggestion that a penalty should be imposed on the lessee if he fails to clear his boundary within six months of the issue of the lease or within three months of notice being given by the Collector.

With reference to paragraph 9 of the Collector's letter No. 280, dated the 21st October, 1896, it should be made clear that the lessee is merely entitled to the use of the minor forest produce and that its collection for trade purposes shall continue to vest in the Forest Department through the agency of Kiders and other hill tribes.

With reference to paragraph 11 of the same letter a provision should be inserted in the draft standing order empowering the Collector to reject any application if, for special reasons, he considers it inexpedient to give the land applied for on lease.

The Government agrees with the Board in considering that it is desirable to omit at least for the present the requirement that a notice regarding the sale of land should be posted on the land itself and that it is inadvisable to adopt the Collector's suggestion that each applicant should cut a rough boundary round the land for which he applies before it is put up for auction.

With reference to paragraph 14 of the Collector's letter Government considers that it should be expressly stated in the Standing Order that an application not withdrawn amounts to a bid for the land at the upset price of Rs. 5 per acre.

In paragraph 2 of their letter, Messrs. Binny and Co. ask for some assurance that the main road or branches traced out by Government will touch all the plots of land that may be applied for, or that the trace of the road should be published at once. The Board proposes to publish the trace, but subject to the proviso that it may be deviated from as the work proceeds and this proposal meets with the approval of Government. Messrs. Binny and Co. further suggest that the lessee should be permitted to relinquish not less than one-half of his holding. The Government agrees with the Board in considering that there is no necessity to provide for partial relinquishments now that the proportion ordinarily assessable with the enhanced rate of Rs. 2 per acre has been reduced to 50 per cent.

The Hon'ble Mr. Hodgson urges that a clause should be inserted in the form of lease reserving to Government the right to grant permission to any lessee to cut a cart-road through any of the leased lands to connect his holding with the main or one of the principal branch roads, the Collector being empowered in case of dispute to decide whether such road is necessary or not. This suggestion commends itself to Government. The question of the payment of compensation to the lessee through whose holding such a road is constructed is one which must be decided as the circumstances of each particular case may require.

Mr. Hodgson further points out that, when an unopened portion of a holding is resumed, the resumption is, under the orders already issued, subject merely to the refund without interest of the assessment paid on such portion; but as Mr. Hodgson remarks it is only equitable that the purchase money

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Thick Plain Long Sleeve, per doz. ...	2/-	2/8	3/2	3/4	3/10	4/6	5/4	5/12	6/14	7/4	7/8*	7/14	8/4
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2/2 Rib Long Sleeve " ...	...	...	...	...	...	...	...	4/6	4/12	5/12	6/10	6/14	7/2
2/2 " 1/2 " " ...	...	...	...	...	...	...	...	4/4	4/10	5/10	6/4	6/10	6/1
3/3 " Long " " ...	...	...	...	...	...	...	...	...	...	7/6	9/-	9/4	9/8
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A copy of these proceedings will be furnished to the Government Solicitor in order that he may embody in the draft case now under preparation such modifications of the condition previously sanctioned as may be required.

SKETCHES OF THE PLANTING DISTRICTS OF SOUTH INDIA.

III.

WYNAAD.

BY ADOLPHUS ARTHUR WRIGHT.

(Concluded from our last.)

South Wynaad.

I shall now relate something of this part of the Wynaad. The oldest plantation (Coffee) by the late G. J. Glasson about the year 1844—the latter also about that time, but I am not aware by whom. In the early part of the year 1848 I visited the Vayitri, and remained with Mr. Glasson for a few months; his plantation was then very flourishing. The old Pookoote, I think, was owned by some firm in Bombay; that part of Vayitri district in the early days was dense jungle and grass. The labour that could be got there to work in the Coffee were Punnears chiefly. There was also an old estate named the “Caroline,” situated at Kalpatty, five miles this side of Vayitri; no roads, except the steep one of old Tippoo Sahib, the Tambracherry Ghaut was one zigzag steep and rocky. At the foot of the ghaut there were two or three large rivers to be crossed before reaching the Tambracherry Travellers’ Bungalow on the way to Calicut. But since the year 1850, many number of Coffee Planters have sprung up. The Tambracherry Ghaut is an excellent ghaut at present with an easy gradient for carts. This ghaut was opened out by Major Kennedy with a party of Sappers and Miners, and completed by other P. W. Department Officers, his successors. The Trunk Road runs through a village named Meppaddy, where there are several grand Coffee and Tea and Cinchona Estates, and also a few pepper vine plantations. Then it goes on through Sultan’s Battery. This is also a large Coffee centre with excellent coffee. And the same road goes on to Vayitri and on to Calicut *via* the Tambracherry Ghaut. Then there are other branch roads kept up by the District Boards of Nilgiris and Malabar, so that there is every convenience at present for the Planters and others. An extensive field was opened out on the “Vellera Mullay Range,” (this is a range of hills running South West from the Vayitri range,) for the Southern India Coffee Company. It was first begun in the year 1854 or so by a Mr. Beaumont. The highest part of the range is six to seven thousand feet. It is situated about twelve miles West of the village Meppaddy. The plantations there at one time were very flourishing, but now have mostly died out, and I believe the Southern India Coffee Company gave up. But there are yet a few good plantations there kept up by individual Planters. Several old plantations on the Vayitri side and Kalpatty have died out, and their place taken by the destructive lantana. I may also mention that a telegraph line runs on from Ootacamund *via* Vayitri and on to Calicut. There is a Signaller’s office in Goodalur and another in Devalla, in Wynaad, the branch of Devalla being the principal, and from where messages may be wired to any part of India. Moolloo Kurrumber, a peculiar tribe of Kurrumber, is something like the Chetty—he wears his “Koodoommey” in front, he cultivates rice and other grain. They are clever shikaris with the bow and arrow. Each Moolloo Kurrumber possesses three or four Pariah dogs, which are trained to hunt, the string of their bow is made of strong gut, the arrow with feathered stem and sharp steel point. These Kurrumbers go out some three or four times in the year on hunting expeditions. The Moolloo Kurrumber also carries with him a few blunt arrows to kill peacocks; this is made of round hard blunt wood at the end—nowadays, these Moolloo Kurrumbers are not allowed to hunt in Government Reserve Forests. They do not hunt the bison nor the tiger; they never use fire arms, though they may sometimes send in a dozen

arrows into a tiger if they do by chance come across the brute. There is a Hospital in Sultan’s Battery and a Tahsildar’s Catcherry in Vayitri; Liberian Coffee also is being grown extensively by European planters, and there are wealthy Nairs and Moplahs in South Wynaad who have extensive coffee plantations.

The climate and soil of Wynaad are favourable to rice, raggi and sammay, but horse gram and wheat won’t grow. Almost all vegetables, English and Native, do well. Plantains, pineapples, peach, oranges, loquots and mangoes grow; the cocoanut palm will grow also, but bears no nuts as it does in the plains. The areca nut palm also will not grow well and bear as it does in the plains. The nutmeg and clove will not grow. The groundnut, too, will not grow well, owing to the destructive white ant.

The Gold Mining enterprise was also carried on in some parts of South Wynaad, but all the miners came to the same sad end, after spending thousands and thousands of pounds of English money; many a planter who eagerly bought up shares rues it to this day. The Provident Gold Mining Company—also in the South East Wynaad—turned out a swindle, I must say; the Directors in London sent out a Manager, and a Mining Captain to work the Reef, but when they arrived, to their sad disappointment and disgust, no Reef could be seen at all; they sunk shafts and tunnels searching for several months for the Reef, but none could be found, and these men swore blue and left the country. Another Company was formed on the strength of favourable report given by *experts*. This was on the slopes of the Koondahs facing the Malabar Earnad Taluq; they named it as the “Walla Walla Wynaad Gold Mining Company.” The Directors sent out from London an old Colonel (I shall not mention his name) as Manager!! This old Colonel of course got a high salary and spent his time merrily. No mining of course, as as there was no auriferous Reef in that part of the country, and so this unfortunate Company died out. One of the many experts who came from Australia called himself “Professor of Gold Mines,” preaching out such grand lectures and prophesying the future of the gold industry in Wynaad. But whoever heard of retired Military gentlemen, such as Colonels and Generals, as Managers of Gold Mines? Mostly all the miners were Cornish men, who really knew nothing about gold mining. A good many of them were given heavily to drink. At times on a Sunday there used to be such fights among them in the liquor shops at Devalla that a special Head Assistant Magistrate had to be appointed by Government in Devalla and Pandalur to keep these drunken ruffians in order. Miners used to be allowed to work as they liked, and they lived more like gentlemen than miners, because their salary was high. The mining companies made another mistake in South East Wynaad; they were not satisfied with the Medical Officer, the Apothecary, appointed by Government in the Devalla Hospital, but they must needs employ a Doctor specially from England, on a high salary of course, erecting a substantial bungalow for him, besides a Hospital and so on.

I shall now end my notes on the Wynaad as I have known it in olden days and at the present time, with the hopes that they may be of use to people who have not been in this part of India.

THE END.

THE “LADYBIRD” AND ITS CRITICS.

WE are very much indebted to Mr. E. E. Green—specially qualified as he is to write with authority on the subject—for the following communication sent by him to our “senior” in England. It will be seen that Mr. Green sees no reason in the adverse criticism recently offered, for refusing to make the experiment proposed of infesting “ladybird” beetles to deal with the green-bug on coffee; but as the expense would be widely distributed, over planters in Mysore, the Straits, &c., if they agreed to join in the employment of Mr. Koebele, it ought not to cost any individual proprietor more than a few rupees. We are back, therefore, at the point where support for a joint mission should be canvassed for—who will lead the way? Mr. Green writes as follows:—

“Budleigh Salterton, Devon, Oct. 8.—I have just been read-

It has been remarked several times that no doubt PHELPS & CO. will raise their prices, now that they have taken their Ladies’ Department to 4, Russell Street, but it is a mistake.

ing in the *Ceylon Observer* (Overland Edition, Sept. 16) an article called 'The Lady-Bird a Humbug,' by an anonymous correspondent.

"There are one or two points in the article that warrant a little criticism. Your correspondent argues from the fact that because 'scale-insects are found in Australia, therefore, the introduction of ladybird beetles from that country must manifestly be useless. This fact does not warrant his position at all. In their own country the lady-birds are hampered by numerous natural parasites that prevent them from multiplying sufficiently to get the upper hand of the prolific bugs. But when the beetles are settled in some other country, having left their parasites behind, they are in a position to multiply unchecked as long as a sufficiency of their food is forthcoming. And this being the scale-bug, the failure of food would mean the success of the ladybird experiment.

"It may be said that other natural enemies will find them out in the new country. And so they will—in time, but experience shows us that it is usually a long time before fresh enemies acquire the habit of preying upon the new introduction.

"There is no question whatever about the value of the work effected by the 'Vedalia Ladybird,' which was imported from this same scale-infested Australia. In a comparatively short time this insect practically freed the orange plantations of California from the dreaded 'flute-scale' (*Icerya purchasi*) that had proved so destructive there.

"The partial failure of the experiment in other places requires an examination of the particulars of the individual cases before we can judge of their merits. It appears—from quotations supplied by your correspondent—that ladybird beetles have not given entire satisfaction when employed against the ravages of the 'black scale' (*Licanium oleæ*). Now this particular bug forms a very hard scale in its later stages which serves as a protection for the large number of eggs deposited beneath it,—a fact which may possibly account for its ability to resist the attacks of the beetle.

"Our own chief pest, the 'green bug' (*Licanium viride*), is an especially unprotected insect, the skin of the body remaining soft to the end. In this particular it very closely resembles the species which we are told by Mr. Kœbele has been exterminated in Honolulu through the agency of ladybird beetles—also originally hailing from Australia.

"Your correspondent very justly suggests that 'it would be unwise to incur any extraordinary outlay' in the matter. I do not advocate any extraordinary or even very heavy expenditure. A few cents per acre for all the coffee in the island would produce sufficient funds for the starting of the experiment. The suggested remedy is not of course a certainty,—otherwise there would be no two questions about its immediate adoption. But if nothing should ever be attempted for fear of possible failure, there would not be much progress in the world! The possible benefit is enormous,—far out-balancing the expense of a possible failure.

"I notice that one of the critics quoted by your correspondent impugns the value of the ladybird, partly because 'she does not extirpate the fungus.' Surely this is rather unreasonable! I presume the fungus in question to be the sooty growth usually associated with an attack of 'bug.' But if you kill the cause (the bug), the effect (the fungus) will soon pass off. Moreover this fungus is not in itself injurious to the plant. It germinates and subsists solely upon excrementitious matter from the bugs.

"As for your correspondent's concluding remarks upon scientific as opposed to practical work. In many cases the life history of an organism must first be known before a logical remedy can be suggested. It is possible that a scientist—from his special training—may be in a better position to carry out the first part

of the work; while the practical agriculturist may best know how to apply the results of the first man's labours."

To which we may add that there is surely a high negative value to be attached to the scientist's work when he is able to indicate—as Thwaites originally did and Marshall Ward later—the fruitlessness of the coffee planter trying to expel the leaf fungus from his fields when once it has taken possession. Now the fungus is supposed to be in a decaying state itself in Ceylon while the "green-bug" has long been regarded as a far more serious enemy; and science as well as practice points to a remedy in the "Vedalia ladybird" to be got from Queensland.—*Tropical Agriculturist*.

SISAL HEMP.

AGAVE SP.

[DICTIONARY OF ECONOMIC PRODUCTS, VOL. I.; A. 631.]

Results of Examination of a Sample of Sisal Hemp Fibre at the Imperial Institute.

The information (No. 34 of 1896) which follows is given as a Supplement to *The Agricultural Ledger* No. 18 of 1896 on Agave.

In acknowledging receipt of a sample of the fibre of *Agave rigida*, Mill., var. *sisalana*, submitted for opinion as to quality by the Superintendent, Government Botanical Gardens, Saharanpur, the Reporter wrote:—"The sample of Sisal hemp seems brittle, short, and to have lost in strength during preparation. In the present state of the European demand this fibre would, it is feared, not fetch a very high price. Aloe, Sisal, and other allied fibres are a drug in the market."

The quantity of fibre received was small, the produce of 2½ lb of green leaves only, but it was thought advisable to forward the sample to the Imperial Institute for favour of experts' opinion and a commercial valuation.

From information subsequently to hand from the Superintendent, Government Botanical Gardens, it appears that the plant has been under cultivation at Saharanpur only a few years, and that probably the leaves have not yet attained to maturity.

The matter was promptly dealt with by the Secretary and Director who replied as follows:—

From SIR F. A. ABEL, Bart., K.C.B., Secretary and Director, Imperial Institute, London, to GEORGE WATT, Esq., M.B., C.M., C.I.E., Reporter on Economic Products to the Government of India, Calcutta,—No. 560—69, dated the 12 March 1896.

I have the honour to acknowledge the receipt of the sample of Sisal fibre advised in your letter dated 5 February 1896. The quantity sent weighs only 12 grammes and is insufficient for a complete chemical examination, but this will be carried out as far as is possible with the limited supply of material, and the results forwarded by next mail.

The sample has been sent to two experts, both of whom have made a remark on the short staple of the fibre. For fibre of the length and quality of the sample, the present market price would be from £14 to £15 per ton, at which rate a very large quantity could be sold. If, however, similar fibre could be obtained of greater length, the value would be considerably enhanced, and reach £17 to £18 per ton. Mr. C. E. Collyer, one of our Expert Referees for Fibres, is of opinion that

Ladies in the mofussil do not always realize that they can by corresponding with PHELPS & CO. at their Ladies' Branch at Russell Street, keep in touch with all that is newest and most fashionable in the world.

better material could be obtained, if attention were paid to the selection of plants for cultivation on suitable soil.

Sir F. A. Abel kindly supplemented his previous letter by another giving the results obtained from a chemical examination of the fibre.

From SIR F. A. ABEL, Bart., K.C.B., Secretary and Director, Imperial Institute, London, to GEORGE WATT, Esq., M.B., C.M., C.I.E., Reporter on Economic Products to the Government of India, Calcutta,—No. 83—70, dated the 18th March 1896.

In continuation of my letter, Flying Seal Series No. 82, dated March 12th, 1896, I have the honour to forward the results obtained from the chemical examination of the sample of Sisal fibre. For purposes of comparison, the results which are given below are arranged side by side with those furnished by samples of Sisal from Trinidad and from the Bahamas respectively. The fibre suffers somewhat more in the hydrolytic processes than the other fibres, otherwise there is but little difference between them. The quantity of fibre sent was insufficient to admit of the carrying out of the "mercerising" and "acid purification" processes:—

	Trinidad Sisal.	Bahamas Sisal.	Indian Sisal.
Moisture, per cent ...	11.6	12.8	11.2
Ash, per cent. ...	1.0	4.4	1.7
Hydrolysis (a), loss per cent.	11.7	12.0	13.4
Hydrolysis (b), loss per cent.	13.5	16.1	17.2
Nitration, gain per cent. ...	32.9	29.7	30.8
Cellulose, per cent. ...	77.2	75.9	78.8
Acid purification, loss per cent.	1.0	8.1	...
Mergerising, loss per cent ...	8.9	13.4	...

These communications were acknowledged by the Reporter in the following letter:—

From GEORGE WATT, Esq., M.B., C.M., C.I.E., Reporter on Economic Products to the Government of India, Calcutta, to SIR F. A. ABEL, Bart., K.C.B., Secretary and Director, Imperial Institute, London,—No. 1226—76 F. S., dated the 29th April 1896.

I have the honour to acknowledge with thanks the receipt of your letters, Flying Seal Series, Nos. 79, * 82, and 83, dated 4th, 12th, and 18th March, 1896, respectively, on the subject of *Agave rigida* var. *sisalana*.

In reply thereto, I beg to state that a copy of the report kindly furnished by you has this day been forwarded to the Superintendent, Government Botanical Gardens, Saharanpur, from whom the fibre was received. I also propose to issue these letters as a fly leaf of additional information to our *Agricultural Ledger* on *Agave*. I would take this opportunity, however, to observe that in a communication received from the Director of the Royal Botanic Gardens, Kew, a less sanguine view is taken of India's prospects in the *Agave* fibre supply than would seem justified by the valuations furnished by the fibre experts of the Imperial Institute.

* Acknowledging receipt of letter covering sample of fibre and promising action on arrival of the latter.

RAMIE.

The following letter from Messrs. John Haddon & Co., Salisbury Square, London, E.C., dated 4th December, will be found of interest. We may mention that it was written in reply to some enquires of ours:—

Machinery.

RAMIE.—We have sent out several machines for the treatment of this fibre on the spot, and for your guidance we are sending you under separate cover our "Produce Merchant's Guide," [An extremely comprehensive and very useful publication, this, for all planters.—Ed.], giving full particulars on pages 20 & 21. You will understand of course that it would be necessary for us to know before supplying you with a machine what quantity per day you would be likely to require to turn out. Steam power also is a necessity for working the machine. If your friends would like to communicate with us, we shall be pleased to place any information we have before them.

With regard to whom they shall despatch the fibre for sale, we of course can handle this quite well, and if any such parcels are committed to our care, we shall be most pleased to remit immediately upon receipt of the produce, say, two-thirds of the value of the goods and accounts would follow in due course.

Picees.

Now with regard to prices. The raw *Ramie* is commanding just now from £15 to £16 per ton delivered here. This is a regular market, but the *Ramie* arriving here in a prepared state is more or less nominal, and it is difficult to get at quotations. Privately, however, we may tell you that we are hand-in-glove with one of the largest syndicates here, and we know that they have bought parcels up to £27 to £28 and even £32 per ton in the prepared state. Do you think that it would be a wise plan for you to make a small trial consignment? And we can assure you we will do our very best with same.

Personally, we are quite satisfied that sooner or later this *Ramie* fibre business will be a huge success, the articles we have seen prepared from the fibre certainly run silken manufactured articles very closely. The great drawback of course with regard to *Ramie* is its non-elasticity, but of course there are many articles which are now manufactured from silk in which elasticity can be easily dispensed with."

The following synopsis of a "Travers Lecture" on "Recent Researches in Commercial Fibres" delivered at the London Institute, just before the mail left, by Dr. Morris, C. M. G., Assistant Director of the Royal Gardens, Kew, is worth reproduction:—

After a brief review of the progress made in the production of fibres already familiar in commerce, Dr. Morris directed attention to recent developments in the singularly interesting fibres known as China grass and ramie. These, he said, had hitherto been regarded as at once the most attractive and elusive of fibres, and as having not only raised the greatest expectation, but led to the most lamentable failures. As the result of efforts extending over 50 years, these fibres were at last being utilized in this country in the manufacture of textile fabrics of a high order. The two plants concerned were members of the nettle family, but without stinging hairs. The China grass (*Bohmeria nivea*), a native of China, was suitable for cultivation in warm temperate countries; while the plant known in Assam as rhea, and in Malay Islands as ramie B. (*tenacissima*) was suitable only for tropical countries. It was pointed out that remunerative crops could be grown only in well-drained soils of an exceptional character. A plentiful rainfall, well distributed over the year, was essential, as well as a high and uniform temperature. Under such conditions crops of stems weighing 15 to 20 tons per acre could be produced in the year. This quantity would yield ribands or raw fibre of the value at present prices of £8; or filasse (the finished fibre) worth about £14. The cost of the cultivation in suitable localities was estimated at £4 per acre. The cultivation was recommended as likely to be advantageous in some parts of the West Indies, and especially to supplement that of sugar. The fibre, when completely cleaned, was capable of being used for the finest lace as well as for canvas and sail-cloth. In fact, the industrial application of this beautiful fibre was calculated to prove of the greatest service in the manufacture of textile fabrics of all kinds.

Rhea in S. India.

On another page will be found a brief resumé of a most unsuccessful experiment with Rhea in Wynaad. The plants grew vigorously, but the second year vast hordes of caterpillars appeared on the scene and relieved the proprietors thenceforth of all expense in the matter of removing the crop.

Rhea has also been tried some years ago in the Bowani valley, but was given up as a bad job. The improved machinery and better market now available should tempt experimenters afresh. By the way in our short advertisements Rhea seed is offered for sale.

FAURE'S NEW PATENT RAMIE FIBRE DECORTICATOR.

No more Ribbons or Strips.

New Machinery.

It is claimed for this machine that it forms the connecting link, so long sought for between the grower of ramie and the spinner and manufacturer of the fibre; and that its effect will be to place ramie on the list of every-day textiles to be produced and utilized without difficulty in any desired quantity. The battle has been long between the chemist and the machinist concerning the role each has to play in the production of ramie, and until the point has been definitely settled, the fibre, notwithstanding its magnificent qualities—strength, lustre, ductility, capacity for taking colour by printing and dyeing, and for mixing with other fibres, has been under cloud. The manipulation of the stems in the dry state so long advocated, has been definitely acknowledged to be erroneous, experience having proved that to obtain the full advantages of the many brilliant qualities of the fibre, the stems must be treated in the green state. The chemist has insisted that as little as possible must be done to the green stems by machinery, leaving the main treatment to be carried out by chemicals. The machinist has retorted that the fibre is seriously damaged by chemical processes, which take away its strength, its lustre, and its ductility, and that therefore machinery must play the important part; and so for many years the battle has been waged, first one side and then the other gaining the victory.

The problem, commercially considered, has been to obtain a machine, which can carry out economically the following processes without damaging the fibre: (a) Remove the woody parts from the green stems; (b) Remove the outer skin or cuticle, which has so long baffled all efforts, mechanical and chemical, to remove it; and (c) Extract as much as possible of the juices of the stems, so as to simplify and cheapen the degumming process. The two former processes are effectively carried out by hand labour in China, where workmen scrape each stem and remove the skin and the wood, but leave most of the juice in the fibre.

All inventors of ramie decorticators have concentrated their efforts on machines to produce ribbons. Needless to say, the object aimed at has fallen far short of the real necessities of the case, hence the long delays and numerous disappointments with which this fibre is associated. Ramie ribbons have three serious, almost fatal, defects: They contain a large percentage of woody matter; they contain the outer skin or cuticle of the stem, which has been the despair of the chemist to solve and remove; and they contain the major portion of the juice which coagulates in drying and becomes gummy.

Mr. Faure has aimed at the construction of a machine to produce *not ribbons but the fibre* in one operation, free from woody matter, from skin, and with the least possible amount of juice in it. His product is equivalent to "China Grass," but in an improved condition, because his machine is much more regular and efficient in its action than the varying hand labour obtainable in China, and because the possibility of adulterating the fibre is done away with. Mr. Faure's first decorticator obtained the gold medal at the last Paris trials. It was the best of the machines exhibited there and tested by actual work with green ramie stems. Being desirous of improving on his first attempt, he has since constructed several decortivating machines, each one showing marked superiority over the preceding ones. A

skilled engineer and machine maker, with every facility in his own works and ample means for carrying out his ideas, he had the benefit of another very important advantage, namely, the growing of ramie on his own estate in the Limousin near his works, which enabled him to practically test his ideas by actual experiments on the raw material—a combination of advantages probably not enjoyed by any other inventor of decorticators. Patiently and scientifically he has, step by step, worked out the problem; and the machine now produced represents the result of his several years' labours. It is simple, inexpensive, and does its work admirably.

It is fed by two men, working alternately, each holding in his hand about ten stems. The stems are used in the same condition as cut, with the leaves on. The operation of feeding is as follows: The stems are passed in twice. They enter the machine, leaf ends first, and after having been treated about two-thirds of their length they are withdrawn, an operation easily carried out, and fed in a second time, the thick ends first, so as to complete the operation. It frees the stems from all woody matter and from the outer skin or cuticle and extracts a large portion of the juice, thus producing fibre retaining all its valuable qualities.

The machine, which weighs 11 cwts., is simple in construction, very strong and not liable to get out of order. It consists mainly of the framework and driving gear, the decortivating drum carrying beaters, and the feed bed. This latter is the important feature of the machine, by reason of its special construction which varies at different parts to suit the various descriptions of work which the machine has to perform. The first part of the bed is curved outwards, the second is straight, and the third is curved inwards. The ramie stems are fed into the machine over the first part of the bed, where the woody portion becomes immediately broken and partly removed; the stems pass on to the second part, and as the speed of the beaters is considerably greater than that at which the stems are fed into the machine, a scraping effect is produced on the strips, seeing that the distance between the beaters and the surface of the bed is less than the thickness of the strip. This scraping action effects a double purpose; it attacks the outer skin and also all matters extraneous to the fibres. The strips or stricks of filaments then pass down vertically into the machine and the separated matters, viz., most of the woody parts, the skin and gummy substances, are thrown out to a distance by the centrifugal force of the beater drum. When the stems have entered to within a short distance of their end, the return movement is effected and they are withdrawn. During the withdrawal the following action takes place:—At the inward curve or third part of the bed, the filaments are slightly and gradually grazed by the beater blades, which throw out the coarser of the debris still adhering. The operation is performed with great delicacy, the fibres assume the position of the chord of the curve and are constantly agitated by the beaters. When the fibres arrive at the second part of the bed, as the space between it and the beaters is infinitely reduced, the entire removal of matters still adhering to the fibres is effected, and these latter leave the machine:—white, parallel and free from woody matter, from skin, and from the major portion of the juice. The conca bed or breast is mounted in such a way, that its position to the action of the beaters is easily regulated. The brackets which carry the bed are supported by spiral spring cushions and flexible legs, the object being to obtain a rubbing action between the beaters and the fibre, having for its special object the loosening and removal of the skin or outer cuticle. The elastic bed gives way or vibrates an enormous number of times per minute, and this produces the desired rubbing or "knuck joint" action between the beaters and the fibres on the be

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The Wynaad and the Planting Industry of South India .. By “Francis Ford,” Re. 1.

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P.S.—Any books required, not in the above list, we shall do our best to procure and forward by Value Payal Post only.

“PLANTING OPINION,” COONOOR.

the shape of the feed bed causes it to remain clean and free from extraneous matter through the action of the beaters. Hocking is thus rendered impossible. All abnormal strains are avoided, and the machine can be kept at work from morning till night without stoppages for cleaning. The refuse falls underneath the machine and is removed from time to time. In the case of a number of machines working together, an endless band or conveyor, passing under the machines, removes the refuse continuously and so keeps the neighbourhood of the machines perfectly free from it.

Faure's machine is simple in construction, and capable of being easily worked by native labour in the ramie plantations or works connected therewith. Although simple, it needs to be constructed with the greatest accuracy in order to ensure effective working. The cylinder, carrying the steel beaters is perfectly balanced and accurate in its action; it runs at 400 to 500 revolutions per minute; the surface of the beaters is perfectly parallel with the setting of the feed bed and capable of working close up to it, say within a distance equal to the thickness of a piece of writing paper. The feed bed, the varying profile of which is of such enormous importance in the efficacy of the machine, is made with the greatest of accuracy and of the best materials.

With regard to the production, practical experience shows that two men working at one machine can treat 360 lb. of fresh green stems per hour, or about 32 cwt. per day of ten hours. The amount of dry fibre produced depends largely on the nature and growth of the stems; the percentage of fibre contained in green stems varies very much according to circumstances. On a 5 per cent. basis, the nett production of dry fibre by each machine per day of ten hours is 180 lb. When the stems are specially good, more than 200 lb. of dry fibre have been produced per machine in ten hours. Under ordinary circumstances production varying from 160 to 200 lb. of dry fibre in ten hours per machine may be expected.

The apparently small production per machine needs a word of explanation, seeing that decorticating machines are being made professing to treat large quantities of green ramie stems per day, but it must be borne in mind that their production is ribbons not fibre. Ramie ribbons or strips must always be unsatisfactory, and will, no doubt, in time disappear from the market. The buyer has no means of testing their value, the quality or percentage of the fibre, and whether damaged or not by the decorticating machine; hence he will only give a low price for an unknown article, in addition to which they cannot be highly compressed and packed into proper bales as other fibres are. Therefore the freight on ribbons is unduly high; they also contain a very large percentage of useless material on which freight has to be paid.

Faure's machine produces fibre, which will always rank higher in the market even than China grass, by reason of its regularity in condition and quality. The buyer can easily see and test what he is buying; he will therefore be disposed to give it its proper classification and pay its full market value; in addition to which by reason of the bales being well pressed and containing little else than ramie fibre, the freight and expenses per ton will be at the minimum.

The product of Faure's ramie fibre machine cannot be compared with the ordinary ribbons or strips. It is an entirely different article, and will fetch a very different price in the market. The machine, when treating good stems, produces about 5 per cent. of waste fibre, that is to say, fibre which escapes from the hands of the workmen. It cannot, however, be correctly classified as waste, seeing that it has excellent value for second quality ramie, and here we would note that in relation to ramie, there is practically no real waste, as the fibre is always saleable.

Its qualities of strength and colour are so great that, even for paper-making, the very shortest of the fibre always has excellent value and fetches good prices.

In connection with the question of fibre production and waste, the nature of the growth of the stems must be considered. If they are planted too far apart, the stems have a tendency to unduly throw out branches. Each branch represents a break in the continuity of the fibre of the parent stem. Recent plantings of ramie are being made with the stems much closer together, so as to prevent undue branching and improve the quality of the fibre. Green stems grown in a tropical or sub-tropical climate give the best results. The growth being quick the stems carry plenty of fresh green juice, which assists the decortication very much by leaving the fibre freely and carrying with it in its downward course from the beating point of the machine large quantities of extraneous matter. The condition of the stems at the time of treatment also plays an important part. In order to ensure the best possible fibre, the stem should be treated within a few hours of being cut. They should not be over-ripe, as the fibre deteriorates after the stems have arrived at maturity. The best plan is to cut them either just at full maturity or slightly before. The fibre thus obtained excels in whiteness and ductility, retains its full lustre, and shows to the best advantage during subsequent manufacturing operations, such as preparing, combing, spinning, dyeing, &c. Each machine requires about one horse-power to drive it. When a number of machines are working together less power will suffice; thus eight horse-power will drive ten machines.

Faure's patent decorticators were sent last year to Italy, Egypt, Tonquin, &c., and have more than justified the expectations that were raised respecting their action and the quality of fibre they produce.

A few words will not be out of place concerning the disposal of the fibre after leaving the machine. It may be dried at once and then baled, its condition being the same as China grass. Experiments made last season show that steeping the fibre in boiling water for about half an hour and squeezing it thoroughly previous to drying, gives very favourable results, as when dried the fibre is soft and separates freely. The gummy nature of the juice having been seriously modified by boiling, the final degumming process is rendered very easy, cheap, and short. The addition of about 1 per cent. of carbonate of soda to the water may be made if the circumstances are favourable. This partially degums the fibre and does away with any possibility of fermentation or deterioration during the transport to manufacturing countries.

The sole representation of Mr. Faure's interest, both for machines, licenses, and patents has been entrusted to Mr. Thos. Barraclough, of 20 Bucklersquay, London, to whom all applications should be made.—*Tropical Agriculturist*.

LETTERS TO THE EDITOR.

ANSWER TO CORRESPONDENT.

["BET." Your suggestion regarding the reprint of the late Mr. Pringle's article is one we shall be glad to adopt. Can you give us the dates of publication?—Ed.]

ENSILAGE.

SIR,—Will "Agricola" (P.O. of 9th) kindly give information how to make a "Silo" pit *air tight*? I am trying "Ham Ham" Grass Ensilage in lime. Also if he found cattle did well on his Ensilage and if *stall* fed on it. Thanking him in anticipation,
N. S. C. P.

PLANTING BASKETS.

SIR,—Will you or any of your readers kindly inform me of

the names of any firms who undertake to supply planting baskets other than Messrs. Andrews of Mettupalaiyam, and also what rates they charge delivered at Railway Station?

Yours faithfully,
ESSAUDELL.

A WONDROUS SHADE-TREE.

SIR,—I am sending you an extract from the *Indian and Eastern Engineer* on a shade tree for coffee in Brazil. There is a tree of the same family common enough in Mysore and S. India (*Pithecolobium dulce*), Seemay hunasse, Can., Tamil Korkapille, which ought to be as good as the one in Brazil. The Korkapille is used extensively as a hedge, but if allowed to grow attains a good height.

The nature of the tree "going to sleep at night," allowing the cool air and dew to reach the coffee, is what we want.

"BILLY BUSREE."

The *Kew Gardens Bulletin* contains the following notice of a tree highly esteemed as a shade for coffee in the Republic of Columbia which is taken from a letter addressed to Kew by Mr. R. B. White, dated Palmira, August 6th, 1895. The tree has been identified as *Pithecolobium polycephalum*, Benth, *Hooker's London Journal of Botany*, lii. (1844), p. 219. It extends to tropical Brazil, and was collected near Rio Janeiro by Miers. Mr. White writes:—"I enclose some seeds of a tree which is being used most successfully here as a shade for coffee. It has flowers in small white balls just the size of those of the sensitive plant, pods long, flat, compressed, with 15 to 20 seeds. Pods do not open, being held together by strong marginal veins; they simply break up when rotten. No one here knows the name of this tree. I have referred it to Mr. Lehmann, and he does not know it. It is a native only of Antioquia, and grows in a mean temperature of 75° Fahr. It is fond of stony poor soil. A tree 18 months old will cover 144 square yards of ground (12×12). It goes to sleep at night, allowing the dew and cool air to reach the coffee. When young the wood is soft, but on ageing it gradually gets a red heart, and becomes hard and durable. The seed I send has been bathed in sulphate of copper solution, and I believe it to be good, so you can try a few seeds in Kew by way of curiosity and send the rest to one of our tropical establishments to be reported on. When full-grown this tree may be 50 feet high with a spread of at least 50 feet on all sides. Nothing can be better as a shade tree. It is a poor liver, and does not exhaust the soil. It spreads out horizontally; it gives a good shade, not too dense, and during the night allows the dew to refresh the plants beneath. The leaflets do not litter the plantation, and are too small to harbour fungi and moulds. It is easily trimmed and brought to shape. The umbrella ants will attack it, but they can only get hold of one little sub-pinna at a time. They cannot get a good bite and cut out a real imposing umbrella, and so they do not care to draw much on this tree when once they have balanced up working expenses and output. This is an advantage."

[We have already published a notice of this leguminous tree some many months ago. Of the allied species *Pithecolobium dulce*, Can. Korkapille, Mr. Cameron in his *Jungle Trees of Mysore* writes as follows (abridged): "Manilla tamarind tree. Native of South America, naturalised in India and the East. Extensively cultivated as fuel and for hedges. Goats very fond of it. Under favourable circumstances grows into a pretty large tree, which coppices well." Has it ever been tried as a shade tree in Mysore?—Ed.]

COFFEE.

A NEW FACTOR IN THE MARKET.

As a rule, the South Indian coffee-planter does not evince precisely an engrossing interest in the movements of the industry in Brazil. True, his mind is fluttered occasionally by rumours of bumper crops from that country, that are going to smash up the market altogether.

Yet as this dire event has been regularly prophesied every year for the last decade, and prices still keep up to respectable level, he bids grim care avaunt and plods on happily. He has moreover a very solid substratum of fact for his feeling of security.

The prices for the finer sorts of coffee, among which the well-cured bean takes a very high place, are as stable as that for the finer makes of tea. And for a very simple and similar reason. In both cases the countries or districts capable of supplying the highest qualities are or were strictly limited in extent, and the demand therefore invariably in excess of the supply. We use the term "are or were" with purpose. For though with tea things remain, and seem likely to remain, in *statu quo*, a new factor has been introduced into the coffee market that deserves to be closely studied. We allude to the probable, or more correctly, possible effects of the present large influx of European, and especially British, capital into Brazil; and not only into Brazil, but into Mexico and those other coffee lands in the New World which together supply nine-tenths of the world's demands.

Before proceeding, we wish it to be distinctly understood that it is far from our purpose to pose as alarmist or prophets of evil in any way whatever. But we conceive that we should be failing in our duty to our readers to pass over without notice, the presence of a disturbing factor, the potential effects of which are difficult to over-estimate.

As we have mentioned before, East Indian coffee now occupies a practically unique position in the market, due to its uniformly high grade of excellence. A question of the utmost interest arises: to what extent is this excellence due to its inherent qualities derived from seed, soil and climate, and how far is it due to superior methods of preparation? On the answer to this depends much, if the distinguishing characteristics of our plantation coffee are mainly due, and we do not think they are not, to our peculiar local conditions, then all is well. But if, on the other hand, this excellence is more largely dependent on the care bestowed in curing, both on the estate and in the curing works, then indeed is there some cause for apprehension.

The coffee countries of the New World have hitherto been very content to garner their large crops with the minimum of trouble and expense in gathering and curing. And this is not to be wondered at, if we take into consideration the nationality of the planters, and the social atmosphere in which they are enveloped. Descended in the most part from the old hidalgos and noblemen of Spain and Portugal—those intrepid conquistadores who filled the Old World with their fame and the New World with their infamy—there is nothing on which they pride themselves more than their ancient lineage. They do not trouble themselves about details of cultivation, or take much concern in the hundred and one minutiae of plantation work. The blue blood forbids it. They view their vast possessions for their estates or haciendas are reckoned in thousands and tens of thousands of acres, with much the feeling of the old seigneurs and ancient nobility of France and England, content to take what the gods gave, as long as all was well. Of late, it is true, the abolition of slave

has roused them to a sense that the times are changing, and that they must rouse themselves in earnest. But the southern strain in their blood, intensified by the tropical climate, is as yet too powerful for their new born enterprise to counteract.

Added to this the fall in both the silver and paper exchange has been the means of largely restoring their former losses. So that it may be said with absolute safety that if Brazil were left to itself, we should have little need to fear from its capabilities for producing apparently unlimited quantities of low grade coffee.

Aye, if Brazil were left to itself. But this is precisely what is not being done. European, and especially British, capital is being attracted freely, and the total amount of coffee land now under European control is by no means small. And the enterprising Briton has an insatiable greed for wealth. Ten per cent. will never satisfy him, if he thinks he can get twenty; and he will not stop at twenty per cent. if there are reasonable chances of getting twice that amount. A Brazil coffee plantation pays very well in the ordinary way, but the British shareholder wants to make it pay better, and is casting about for all manner of means to secure that desirable result. Take the Dumont Coffee Company, for instance. Last year its crop was about one-tenth of what Ceylon's used to be in its palmiest days, say 73,000 cwt. or roughly a quarter of the total yield of South India. Well, the great differences between the prices of American and Indian coffee has struck the Managers of this company very forcibly, and they are taking steps to imitate our methods of curing in their own works and factories. And that their hopes are not without foundation may be noted from the example of Costa Rica, a country whose produce occupies a very favourable position in the market compared to that of Brazil. The higher price enjoyed by the former country is stated, and we believe, on excellent authority, to be wholly due to its improved methods of curing, introduced many years ago by an ex-Ceylon or Indian planter. We have not statistics giving the exact extent of land, in coffee or fit for coffee, owned or controlled by European capital. But put into crop, and the American crops are glorious ones, there is little doubt that it more than exceeds the total yield from South India. And be it noted that the success of one company is sure to be noted and followed up by other companies, and perhaps even by the Brazil planters themselves. Then will come the tug of war.

We do not believe, nor do we wish others to believe, for a moment, that the long skilled experience and pluck of planters in South India will allow them to be worsted in the struggle. They have been in the depths ere now and have risen again more buoyant and prosperous than before. We would only wish to point out a very simple moral. If it be a fact that the general adoption of improved methods of curing have the effect, it is surmised they will, the energies and brains of planters will be taxed to the uttermost. Planting has become a business in which all possible means should be tried to secure its success. In short, planting tends or should tend, every day to become an exact science, a pursuit in whose aid should be invoked all the services that experts, be they botanists, chemists or

skilled gardeners, can render. There is still far too much routine, too much "rut-work" on plantations. The tendency is still too great to decry everything that has not become hoary with age, as mere unpractical theory.

We will conclude with a report of a by no means imaginary conversation. The owner of a three hundred acre estate was complaining about the poor crops of now-a-days and the comparatively poor returns he was getting. A non-planting friend, with theories of his own, instanced a certain patch owned by an old retired planter who had "seen better days," as giving regularly seven cwt. per acre. Ah yes, but that is only garden cultivation. It could never be done on a large acreage, look at the manure and the cost in superintendence! Like all men with theories of his own, the non-planter remained unconvinced. What is your present manure and cultivation bill? It was as high as a hundred rupees per acre. The "garden planter" only spent twice that. And your superintendence? Say twelve rupees per acre. Reckoned at Rs. 200 a month the "garden planter" spent just ten times that amount. There you are, exclaimed the other triumphantly, how could I afford that with my profits? Why I should lose twenty rupees per acre on superintendence alone, without counting the loss in cultivation of one hundred more. It's as clear as ditchwater, didn't I tell you it wouldn't work?

Wait a bit, said the pig-headed Theorist. My friend, the "garden-planter," nets *two hundred and forty* rupees per acre, after deducting all expenses of superintendence and working. What have you got to say to that? The discussion closed here.

With a certain amount of toning down, there is a moral to be drawn by some from the above, an they would. It is rather clearer than ditchwater, we think.

First beginnings.

It is said that all the coffee trees now growing in America are the progeny of a single plant introduced in 1714. There are some 60 species altogether of the coffee plant, the most valuable being natives of Africa. Its introduction into Mysore is stated to be any time between 500 and 200 years ago. We should be inclined to fix it rather at the former than the latter date, as a considerable time must have elapsed to develop the peculiar characteristics of the Mysore "chick." There are a certain number of Indian varieties besides, and as far back as 1696 the Dutch carried the seeds of coffee trees from Carranova in Malabar to Java, which country produced as much as 30,000 lbs. some 23 years later.

Costa Rica.

The average yearly crop from this district is about 350,000 cwt. The climate is said to greatly resemble that of Ceylon, the latter being seven, and the former ten, degrees north of the equator. The hilly country lies between two seas or oceans, and rises to 7,000 or 8,000 feet. The dry season in both being from January or February till May, the rest of the year wet with occasional dry intervals in August or September. The crops are reported from the most authentic sources to be simply huge, a general estimate of 15 cwt. per acre being considered about correct. The trees

are planted ten to twelve feet apart, *i.e.*, some 300 to 400 per acre. As mentioned elsewhere, the pulping and curing are on modern lines, with the result that Costa Rican coffee sells up to 107s. per cwt. The margin of profit can readily be imagined to be extremely great. The only drawback is the scarcity of labour, plucking being simply a general stripping, owing to lack of hands. The native Indians will not work, the labour being performed by Costa Ricans, who claim to be pure Spaniards. The Government is doing its best to encourage immigration of poor Spaniards or Italians. Of course the outcome has been a Company: capital £120,000; land 22,000 acres, unplanted forest, from 1,000 feet to 7,000 feet elevation. The name of the venture is the Sarapigni Company. There is one railroad in the country, and the Government is stated to be, for South American republics, fairly honest.

IMPROVED COFFEE SEED.

INTERESTING EXPERIMENTS.

MR. L. W. GREY, of Pykara, Nilgiris, has during the last two years been making some interesting experiments with regard to the production of a first-class coffee seed, containing all the elements necessary to enable it to give seedlings of more than ordinary vigour. A short time ago he submitted two samples to Mr. D. Hooper for analysis and report, on which this gentleman replied as follows, in a letter dated Ootacamund, 6th January 1897:—

"You send me two samples and you ask me as a chemist to analyse and report upon the two samples, giving their value as plant producers And then you say again that "No. 1 produces very good plants."

"As you told me the difference in the preparation of the seeds it would be undesirable to submit them to a full proximate analysis as the ash would not affect the proportion of oil, caffeine and albumen. I tested the seeds for the amount of ash and found in the first sample as received 7 per cent. of ash, and without the parchment 3.71 per cent. The No. 2 coffee as received contained 2.6 per cent. of ash and without the parchment the same. This shows that some of the soluble ash has entered within the outer coat and contributed to the composition of No. 1. The increase of ash would probably improve the germinating power of the seed and not retard it, and so make a vigorous plant. The ash of the No. 2 sample is very poor and is likely to produce a weak seedling and a poor plant liable to the attack of any disease that is prevalent at the time The potash and phosphoric acid in this ash No. 1 would afford the first food for the young plant and give it the necessary start in life that it requires. The absence of this stimulus in No. 2 would be productive of a famine-stricken coffee bush, especially if it were planted out in poor soil. I do not know whether I have made myself clear or have done what you wanted. On reading your letter again I think I have answered your queries and could do nothing more but put the seeds out into different pots and await developments, but this I have no time for."

The No. 1 sample is seed prepared according to certain methods which Mr. Grey does not intend divulging at the present moment. We may mention he will have 200 bushels for sale next October and November at Rs. 50 per bushel delivered at Ootacamund. The No. 2 sample, upon which Mr. Hooper comments so unfavourably, was prepared, says Mr. Grey, in the manner coffee seed is usually treated, that is, with no treatment whatever.

It is to be noted, however, that this latter sample seems to be an exceptionally poor one, as by Mr. John Hughes'

analysis Ceylon parchment coffee is represented as having 3.30 per cent. of ash. Other figures given in Mr. Cochran's Ceylon Manual of Chemical Analysis show that "raw" coffee (presumably minus both parchment and silver skin as it was tested against roasted coffee) averages about 4.4 per cent. of ash, some being as low as 3.97. We prefer, however, taking Mr. Hughes' figures, as in the other case the bean must have lost a great deal more moisture and consequently the ash percentage shows up higher. Mr. Grey's No. 1 sample is certainly excessively rich in ash, having 7 per cent. compared with Mr. Hughes' 3.30 per cent.; and Mr. Hooper's comments are worth careful noting.

There is still one thing we should like to point out, and that is, the desirability of such additional data as the weight in lbs. per bushel of the two samples, and the amount of moisture present in each. Mr. Grey might also do well to have samples of seeds from other estates analysed in the same manner. In concluding we congratulate him on initiating investigations that may possibly prove of very great importance to the industry. The details of Mr. Grey's process are such as to lead us to expect far greater results in the future, if he continues his experiments. According to reports of certain somewhat similar trials made in France and England with potato seed, most gratifying results were obtained, and, though bearing in mind the different nature of the two products, it is not unreasonable to hope for like success resulting from Mr. Grey's experiments. Since writing the above, we have heard from Mr. Grey, who points out that the Ceylon analysis was made in the good old days when leaf disease was in its infancy and that later analysis would show a different tale. He also asks us to procure him samples of seed coffee from Mysore, Coorg and all other districts, and he will have them analysed. Samples of 100 beans each would be quite sufficient. Will some of our friends kindly oblige?

SHADE AND COFFEE IN MYSORE.

(Communicated.)

In reply to Mr. Waldegrave Thompson's queries *re shade* in the *Planting Opinion* of May 9th, No. 18, and his letter of July 7th in No. 27. As Mr. Thompson complains that if one answers his queries, I send you my experiences and trust they may be of use to him as well as to others, and may be somebody else will be roused by his appeal and give their opinions.

Shade is a subject of the greatest interest to all planters and has every year been growing of greater importance and one on which so few men seem to agree on all points. There is not the slightest doubt that we in Mysore have been able to fight borer and leaf disease by having kept our shade or grown it where needed.

Perhaps some of the Mysore Coffee Company's people will give you the necessary information about those places. It is many years since I saw them and they were then not doing very well, not from the system of cultivation being defective, or the kind of shade or want of it, but from want of sufficient and regular supply of funds for keeping up the large extent of land under coffee.

But there are many other places besides the M. C. C. Estates opened under the original shade and well worked splendidly, namely Cannon's Places "Mylemoney," "Busgode" and "Balur" giving their 3 to 5 cwt. an acre, Porter's "Santavari" producing about the same; Courpalais' "Sumpigay Khan," Denton's "Kulhutti," Meppen's "Arobudukool" and very many others in North Mysore. I don't know what these are giving in the way of crops now, but they were all opened out under the original virgin forest, and I don't think such a thing as a burn was done on any of them in the old times. "Mylemoney" and "Busgode" are still under very dense original and some very bad shade, and although the oldest European estates in Mysore are still giving splendid crops, Mr. Thompson wants particulars on:—

1. Shade grown on estates originally thrown in the open.
2. „ planted together with coffee.
3. Original jungle left.

"Shade grown on estates originally thrown in the open."—I don't think there are any places in Mysore that have been intentionally felled "bang in the open." Lots of estates have had the shade that was left scorched and burnt and large fields left without a stick, so we can dismiss No. 1 and go on to No. 2 which covers it.

"Shade planted together with Coffee."—Most of the estates opened within the last 15 or 16 years in Koppa Sullebille and the Jagarvalley have had all the bad shade trees cut out after the clearing, lopped up and burnt off. Shade in the shape of "Atlas," "Jacks," "Howligay" and Cedars, has been planted regularly with or immediately after the coffee. Wherever this has been done systematically and early, the shade has come on splendidly and the lines of young trees 30 and 40 feet high are a sight. And there is no doubt that with the Coorg variety of coffee the first three or four years cannot be too open; after that when they begin to crop, they must have shade. For quick returns for money expended, this is without doubt the best way to go to work. After a good burn the land is very clean, and lining and pitting and filling can be got through more easily than land that has been under-wooded and left to rot. Time, which is of so much importance, is saved and a larger clearing can be done. Young plants, both coffee and shade, too, come on magnificently in the burnt land (provided it has not been over-burned), and in proof of its success one has only to see some of the Sullebille Koppa and worked Jagarvalley estate which are giving their 3 to 5 cwt. an acre. The burnt places come on very quickly and give early returns, some having given phenomenal maiden crops and practically "wiped the state" by the proceeds. With good and regular cultivation and an early intelligent application of manure, estates opened under this system, notwithstanding their early maturity and crops, do not show any signs of exhaustion. But of course it is all a question of capital and labour if your weeding has unavoidably been delayed; the way that weeds can and do come up on the burnt soil is a caution. Every imaginable sort of beastliness in the way of weed and thorn and burr comes up and grows into scrub jungle while you are looking on. Clean hard weeding from the first is the only chance to keep the estate clear of weeds and a digging as early, in fact it cannot be too early, as

possible. If these two works happen to get neglected and the shade does not get put in early after the coffee, the plants get a shock that many do not recover from, and the vacancies will be more plentiful than the standing plants. And in the second year the vacancies have a way of not coming on, which is only equalled by the want of growth of the second year's shade trees.

The advantages of this system are obvious from the above, but that there are many disadvantages will be admitted. Of the great loss of accumulated humus and nitrogen by the burn, I will say a few words about later on. But if the felling and lopping has not been done in time, and a good burn done before rain comes, the leaves drop from the loppings and the twigs will not burn, and the constant heaping and burning costs a lot, and the ground is simply littered with branches and twigs that get in the way when lining, pitting and filling and again when digging; in fact a bad burn means 25 to 30% added to the expenditure and gives the clearing a very untidy appearance. It is neither one thing or the other. Then again if the heaps of loppings are very large, the land gets so burnt that nothing will grow on the patches, for years, or a high wind gets up and a big running fire is the result scorching and burning the shade that has been left, making the clearing too open. Charring the unlopped trees which get so hard, they require twice the number of coolies to lop up.

Original jungle left.—All the oldest estates in Mysore were opened under original shade and that very dense. After underwooding and removing all small trees, the plants, picked up anywhere out of Gowda's "hitloos" were dibbled in in twos and threes in a bunch. I remember the first planting I ever saw done (some time very very long ago, I am frightened to think of the year) coolies had been sent with a request to a neighbouring Gowda. For permission to pick up plants out of his hitloo and they returned with bundles of long lanky stems with three or four pairs of leaves at the end, the bundles being tied with more coffee plants. I was sent out with the Overseer who brought a few coolies and each man was served out with a bundle of plants and a crowbar. The bar was jammed into the ground and a hole made; the cooly held the top of the plant in his hand and the stem above the root between his big and first toe, and guided it into the hole two or three jabs with the box round the plant, which was drawn up a few inches, to be sure of a straight tap root, a small war dance round the plant by the cooly, to run firm and the plant was planted. But to return to our subject very little else was done, but rough underwooding; weeds did not grow under the dense shade, and if a planter was inclined to overdo it, he chopped up the surface soil for a few inches and put it down in his diary as "digging." In the course of time these plants bore crop. There were no such things as lining and pitting or nurseries. "Arabidcool" was the first place systematically lined and pitted, but the shade of the nearest big busree tree in a gowda's garden was the nursery, and I believe a lot of the old trees are still giving decent crops. Cannon's places, with the exception of "Balur," are not planted in line. There are very many old native places in the Jogar Valley planted originally and now over 60 to 80 years old that still have the two and three old trees growing

in clumps, with stems as thick as one's leg. But wherever these places have had the shade cut out in the later years and been put in the open, and the old system of so-called cultivation carried on, they have gone out after one or two big crops. I may as well get back to opening under original shade again.

There is no doubt that to destroy by burning the large amount of accumulated humus, the droppings of numberless years seems to be a most reckless way of going to work, and the loss after a heavy burn and the succeeding monsoon's wash must be incalculable.

Some heavy clogs and loams may be improved by the process of burning, but the lighter porous sandy soils must suffer to an extent that would take them years to recover from. But it is not so much the soil that gets burnt as the surface, the rich nitrogen bearing humus.

But if one could "eat one's cake and keep it," that is find some practical means of saving one's humus and at the same time get so much of the soil charred and burnt as to give the young plants the start they need. If one could turn in the surface soil of 5 or 6 inches and bring a layer of new green soil on the top to cover it so effectually that it could not get burnt, then fell, spreading the lopping over the surface and get a light burn charring the new surface soil. I say if we could do this, it would be the means of saving much valuable mould and manure that would be stored up in the land to be drawn on in future years.

To cut down the forest and shove a firestick in and drive out all the nitrogen and then to allow the mineral matter in the form of ashes to be washed out of the soil by the first heavy rain is such a wasteful way of getting rid of what is a source of manure for years to come—we destroy all this to gain a few months time and spend the rest of our lives and large sums of money in trying to remedy the evils we have knowingly committed.

But digging in and burying the humus and turning up a lot of green soil, without weathering or burning it, I don't think answers. Young plants do not seem to come on well in the new soil. The sun and air have not had a chance of acting on it, and now we know that the nitrogen-producing bacteria do not thrive at a greater depth than 4 or 5 inches. Consequently the young plants with their immature roots are robbed of all available and assimilable food and are starved. I have heard of land being underwooded and pitted and the bad shade cut out and lopped up and put into lines and all the pits filled with twigs and "kutchera" of sorts and burnt in the pits—the ashes being taken out when filling and then put in mixed with surface soil and charred sides of the pit. This ought to give the plants the necessary "leg up" they require.

The difficulty is to find the happy mean, to avoid the two extremes to save the leaf mould and still give the plants the little fillip up they need. But not to run any risk, I say it is better to be on the safe side and save the humus and leaf and loppings and decaying wood and let the sun and rain and air do their work slowly but surely what a firestick will do in a few minutes, with the chance that what has been gained so easily may be as easily lost. The former is a more deliberate way of getting rich perhaps, but it is sure. In one case you have banked your capital,

and if you "can stay" are bound to reap the benefit of it. In the other you are working on your capital and may lose it.

But the trouble is not being able "to stay;" many of us at work on a small capital of course try to get an early return as possible, and what seems easier than to do a big clearing; get a good burn and a large planting done the first year and then get a good big maiden crop. But with the small capitalist, items not in the estimate will crop up; the money runs out only too soon; the maiden crop is a failure. Then he has to mortgage and borrow, and back a mortgage to grow against any coffee yet invented and the worse the seasons and the poorer the soil the better it grows. It seems to be the only thing that will grow with any certainty on some places. And the trouble comes when you have to face the music. It's wonderful what a lot of interest does accumulate in a place, not quite the kind of interest you did take in it, but a good solid petrified interest that works out in rupees, annas and pies.

I have been trying awful hard to tell you and Mr. Thompson all about coffee planting under shade, but don't seem to get any "forrader;" I would recommend him to underwood line, pit, fell and lop up very fine, put as much small stuff and rubbish in the pits and stock all logs and big branches in the lines, up and down the side, of the hill (not across) they form a regular shelter belt and barrier for the line of young coffee. As soon as the stuff in the pits is sufficiently dry burn it. When filling take out the ashes, fill in the pits up to about 3/4, with good surface soil; mix the ashes with more surface soil and fill in breaking in the charred sides of the pit as he does so. I would recommend him also to pit for and treat his shade pits in the same way. And if he will just add 2 to 4 oz. of oilcake and bone and pinch of nitrate of potash to each plant and then dig as early as he can, he will have a clearing that will do him good to look at. Of course if he can't get the oilcake, cattle manure and good short stuff if possible, with 2 oz. of bone meal per plant will do just as well if not better.

There are one or two other questions he wants answered which I will try and do some other day.

"GAS-BAG."

TEA.

Re-firing in London.

There is a movement on foot to start a re-firing house in London, as to restore to tea that briskness which it is so apt to lose on exposure to the damp London air. It will have to be extremely carefully done though, or there will be wailing and gnashing of teeth among Indian planters.

The Share Market.

Last year again witnessed increased demand for tea-shares from the investing public at home. This is shown by the marked rise in the price of shares of all the first-class companies, the debenture stock rivalling the position held by gilt-edged securities of the first class. The interest obtainable, despite the price of the shares, from a careful investment with reasonable security, is 6½ per cent. on ordinary and 4½ to 5 per cent. on secured preference.

flavour extract.

We notice in a contemporary the suggestion that efforts be made in India to obtain an extract of tea possessing all its qualities of flavour and, we presume, "body" also. The matter is certainly worth investigation, but as such a work would demand the highest skill, the extract industry will not be established yet awhile in India. Borroughs Wellcome's bloods are the first step in this direction, and there is no doubt it is a right direction.

best fasteners.

A clever American invention has just been patented. It is a clamp for fastening tea chests or other wood boxes. The clamps are of two kinds, one of steel having eight teeth, and the other of coppered steel having four teeth; either will effect considerable saving in time, labour and expense. Some thousands of chests have already arrived in a satisfactory condition from India entirely fastened with clamps of this kind, with very few nails, and no hoops being used. This little novelty is well worth the attention of tea planters.

tea in China.

The Chinese "creeper," Mr. Sing Put, who recently proceeded to Ceylon to pick up some wrinkles in the working of modern tea-machinery, gave some rather interesting details to the Ceylon papers. Imprimis he states, contrary to all we have hitherto heard on the subject, that there was no tea in China over 80 years old, the custom being to plant out fresh, apparently in the same old fields. Manuring he stated spoilt the flavour, but if this flavour only enables him to get 8*d.* a pound for his best Flowery Orange Pekoe, it does not strike us as being worth much preservation. The yield per acre on Mr. Put's plantation, which is a thousand Chinese acres, runs out to about 160 lbs. per annum, which is very little. We may mention that this gentleman paid his visit of inspection on behalf of the Foochow Tea Improvement Company, a mixed English and Chinese venture, to whose operations we have already alluded.

review of the year.

In their report dated 31st December 1896, printed, except the tabular forms, in full in our Market Supplement, Messrs. Gow, Wilson and Stanton have many interesting figures on the progress of last year's trade. The consumption in 1896 was greater than ever before, being 226 millions against 208 in 1893. The consumption per head too, rose to 5.73 from 4.1 during the same period. The consumption of British grown tea increased 11 millions in one year, the fall in China being 6 millions. The percentages were: Indian 40%, Ceylon 35%, China 9%, other kinds 2%. Over production is an evil which is steadily kept at bay for the present. Foreign markets are growing in importance, consuming last year 42 millions against 27 in 1893. Exchange averaged 1/21½ against 1/13½ in 1895. The average price of Indian tea was 8½*d.* against 9*d.* last year, and over 9¼*d.* in 1894. The average for the season (from 1st June) up to date was 9¼*d.* against 8½*d.* last year. Market kept fairly steady except during the close of the year, when medium qualities went down as they have ever done. Ceylon averaged 8¼*d.* against rather over 8½*d.* for the

preceding two years. Java is gradually improving her position.

Manuring in Ceylon.

That faithful guardian of the interests of the Island planter, the *Ceylon Observer*, has a theory that chemical manures are likely to cause serious damage to tea besides unduly increasing the yield. So he has issued a set of questions concerning manuring in Ceylon, and from the answers already published, we gather the following impressions. That the practice of manuring, though not general, has "come to stay." That bulky manures are almost *non est*, and that little prejudice in their favour exists. That consequently artificials are practically the only fertilizers used, castor poonac and bones being the favourites, in the mixture of four to one. That the effect on the yield is undoubted, an instance being given of some of the oldest manured tea in an estate giving 200 to 250 lbs. more per acre than unmanured tea of a similar age on the same estate. On all hands the value of the tea is said, if anything, to be enhanced.

The above confirms our own opinions very strongly. To begin with the yield and general health of the bushes. After a certain number of years, a very large proportion of the most valuable constituents of the soil are lost, not only by the crops removed, but far more so by wash due to the modes in vogue of careless cultivation. If manure is applied, the bush must largely benefit by making healthier and freer growth. Its roots will extend further into the soil to catch the plant-food carried down by heavy rain. The ascent of the sap will be quicker and more abundant, the bark will be less "bark-bound," and being in better health all round, the bush will be far less liable to the attacks of blights or diseases.

Now as to the flavour question. It is obvious that "flavour," as with the other constituents of the leaf, must primarily be derived from the soil. It is merely an elaboration of the various salts in the crude sap, and if these salts are deficient in the soil, how can they be found in sufficient quantities in the sap? True, this process of elaboration demands certain conditions, such as moderately slow growth of the flush, to enable the sun to effect its full influence on the leaf sap. But, provided manuring is carried on in such a manner as to avoid excessively quick flushes, or in other words if the use of poonacs or other nitrogenous manures is somewhat limited, there is no reason to suppose that the original flavour will be at all seriously affected. But besides flavour there is "body" to be considered, and on all hands it is admitted that the percentage of this quality is greatly increased by the use of manures, especially when carried out on poor soils.

DIGESTED TEA NOTES.

II.

(Continued from our issue of 5th December, 1896.)

Varieties.

There are three recognised varieties, two being Chinese, *Thea bohea* and *T. viridis*, and one Assam, *T. viridis assamica*. To botanists the differences between the Chinese and Assam

varieties are very slight, to practical planters they are infinite, requiring different treatment from the nursery to the dryer. To put it briefly, the China jat is stunted and many-stemmed, with very small leaves. The Assam variety grows into a tree, and on the tea-garden, develops as a rule only one stem, the leaves are very large. The former is a much hardier plant than the latter, and thrives at elevations where the latter only exists; but the Assam bush up to 6,000 feet gives quite double the crop. But whereas the China bush loses almost all its desirable qualities when at a low elevation, the Assam even at fairly high elevations retains many of its low-country advantages.

Hybrids.

These originated accidentally from the Assam tea being crossed with the imported China. The term Hybrid is a very loose one and comprises anything from a China once removed to an Assam once removed. The general favourite is undoubtedly what is termed an Assam hybrid, namely a variety that offers the fewest possible differences from the indigenous Assam. The rule observed by practical planters is to buy their seed from gardens or districts specially renowned for all-round excellence, Manipuri coming first, then Bazaloni, Talcock, Chadna and Singlo. There are others also of course well worth getting. Many planters in South India seem scared at being asked to pay anything over 80 rupees a maund, or say a rupee a pound, f. o. b. Calcutta. Whereas prices for *good* seed range as high as 120 rupees in the Tea districts of Upper India, and even with those prices orders should be booked at least a year beforehand.

Law of crossing.

The produce of a flower fertilised by the pollen of another more nearly relates to the character of the pollen-giving plant than to the other. In fact heredity is more influenced by the male than by the female in this case. As a "perfect hybrid" would be more valuable than the best of either the Assam or Chinese varieties, Mr. Bamber recommends artificial crossing of the best Chinas to, presumably, the best Assams, the pollen of the former being applied to the stigma of the latter.

Soils.

Soil is simply decayed rock and decayed vegetable matter. And the more decayed or soluble they are, the better will plants thrive therein. The decayed rock gives the minerals, and the humus gives the nitrogen. The richest soils are alluvials, *i.e.*, formed by the silt of rivers. The decay of rock (and by "rock" I mean all insoluble minerals, whether in lumps or as soil) is effected by various means. An important one, from the planting view, is that of water, especially when it contains oxygen, carbonic acid or saline solutions or lime. The first can best be supplied by thorough aeration, draining and deep digging. The latter, by the decay in the soil of vegetable matter and also by application of lime. The saline matter can be supplied either as crude salt or as salts of potash, etc. The fertility of the soil is moreover affected by slope and aspect, and temperature of the soil by the heat of the sun's rays. Usually the more finely divided the soil, the more fertile it is, though if so finely divided as to form very compact and

adhesive clay, the formation of roots will be greatly hindered. Again the more clayey the soil, the greater is the depth from which sub-soil moisture can be drawn in times of drought. The moisture holding powers of a soil depend largely on the humus present, hence sandy soils are greatly improved by green-manuring. Now comes a practical point, to be seized on by practical planters, who often have the most fantastic notions on this subject. Evaporation is greatest when the soil is occupied by a crop, *i.e.*, in the dry weather, the more weedy the more the dryer it will be. On clean land, the harder the surface, the greater the loss of moisture: moral—keep stirring the soil in dry weather. In moderation, the warmer the soil, the better the growth of the plant. Wet soils are invariably cold. Almost every soil contains a sufficiency of plant food, the great difference between poor and rich soils being that in the former case almost none of the food is soluble. Clay soils are almost invariably rich in potash. Lime is an invaluable constituent of soils. It mellows and "warms" clays and improves sandy soils by increasing its moisture-holding capabilities. In most tea soils, however, there is very little lime, but magnesia largely takes its place.

The Chinese hold that the quality of the tea wholly depends on that of the soil. In a measure this is true, but climate generally has a far more important effect. Tea will grow in any soil, but thrives best on thoroughly friable loose soil, in which its roots can freely extend in all directions.

In Assam the best soils for both yield and quality are pale, reddish coloured rather sandy loams, containing a good proportion of organic matter and with an open and free subsoil. An abundant and, note this, ye sucking tea planters of Coorg, a *well distributed* rainfall. Bamboo forest soil has been found excellent.

A blue clay subsoil is to be avoided, as the colour is partially due to the lower forms of iron, which, as "Nitrogen" has shown his readers, are such a deadly enemy of coffee, though with very good drainage and cultivation they do well; when soils are light and porous little cultivation is needed, and weeding (burying it is the Assam method) is only necessary when the jungle gets mixed up with the tea-bushes. I cannot help thinking that Mr. Bamber makes a serious blunder (page 57) when he says that a large supply of carbonic acid is indispensable to the use of the growing plant. However, he is no doubt quite right when he says that rapidly decaying vegetation induces a luxuriant growth, whatever the precise cause may be.

In Assam and Cachar, etc., the soils are mostly either low lands, practically reclaimed swamps, or table land slightly raised above the swamp level. The former give huge yields but the quality at first is very coarse, though improving gradually.

Mr. Bamber then gives a long list of chemical analyses which are too elaborate to more than refer to, nor would they be appreciated by the practical planter, who is the very man I want to get at.

It may be noted that old village sites should invariably be well dug and drained before clearing, as though usually extremely rich, yet certain poisonous salts are found whi

must be got rid of before planting. To high elevation planters, such as are on the Kannan Devans and Nilgiris, it will be interesting to note that the only marked difference in the Darjeeling soils, as compared with those of Assam and Cachar, was the comparatively large percentage of lime. The moral of this: use lime freely, but, unless you have excess of humus, always as carbonate, *i.e.*, slaked. Where lime is deficient magnesia seems to replace it with apparent advantage. A fairly representative Darjeeling soil gave the following analysis:—

Moisture	...	...	21.55%
*Organic matter and combined water	...	...	11.28%
Sand silicates	...	...	70.33
Potash	...	...	2.50
Lime	...	...	.25
Magnesia	...	trace	...
Oxide of iron	...	...	5.97
Alumina	...	...	9.27
Manganese	...	...	.13
Phosphoric acid	...	...	.27

Total ... 100

*Containing nitrogen equal to Ammonia ...	...	...	.535%
Do. nitric acid	...	...	.005

The high percentage of potash was derived chiefly from the easily decomposable potash mica.

The question of lime being a most important one, it will be interesting to note that out of samples from each district the average percentage was as follows:—

Assam	.07	(High prices and good yield).
Cachar	.06	(Indifferent prices and „).
Kangra	.29	(„ and fair yield).
Darjeeling	.32	(Excellent prices and poor yield).
Dooars	.22	(Low prices and huge yield).
Chota Nagpore	.01	(Very low prices and indifferent yield).

The main features in all tea soils are:—

1. Lime: very little.
2. Sulphuric acid or sulphates: only traces.
3. Manganese: abundant (this is found in ash of tea.)
4. Nitrogen: the more nitrogen, the more luxuriant the tea.
5. Open soils with porous sub-soils are better than compact clayey soils.
6. Rapid exhaustion of soluble salts in the heavy rains.
7. Phosphoric acid: mostly in insoluble form, and phosphatic manures (bones, superphosphates, &c.) give excellent results.
8. Mica: fairly abundant—soils rich in potash.

The following analysis of tea will be found useful for reference. To simplify it I shall omit all but the most important constituents, *i.e.*, those which have to be replaced by manures;—

Nitrogen	...	...	6 per cent.
Potash	...	...	39.22
Lime	...	...	4.24
Phosphoric acid	...	...	14.55
Magnesia	...	...	6.47

The moral of the above, drawn by Mr. Joseph Cripps, the well-known analyst, is as regards manuring as follows:

- (1) Use plenty of lime, but unless there is abundance of humus, only as carbonate.
- (2) Where potash and phosphoric acid are deficient, in top soil deep cultivation will bring them up again.
- (3) Phosphoric acid, potash and nitrogen are the three chief things, besides lime, that are wanted.

PLUMP AGAINST A BIG FACT.

It is not properly any part of my business to enforce lessons in ethics; therefore I commonly leave that responsible task to those whose vocation it is. But no man can continually write on the subject which constitutes the burden of these essays without now and then running plump against a mighty fact in morals. If you will be good enough to read the following short letters I will then try to show why I was moved to speak as I have spoken.

“My daughter Annie Jane,” writes that young girl’s mother, “now five years of age, was a fine healthy child up to March, 1891, when she began to sicken and fall away. She had no appetite and every particle of food she took came up. She lost strength rapidly and within a fortnight she was thin as a rake, being not much else than skin and bone. For days and days she laid in a half-conscious condition, scarcely moving hand or foot, and to all appearance lifeless. I had a doctor attending her for four weeks, and he said the child was suffering from indigestion, yet, so far as we could see, his treatment had no effect. My husband and I, and all that saw the poor baby, thought she was slowly dying, and we were almost heart-broken at the thought of losing her.

“Nothing that we gave her did the slightest good; and the child was fading away, when one day, towards the end of April, a lady called, and after seeing Annie Jane, advised us to use Mother Seigel’s Syrup. She said she had known the lives of many children saved by this medicine who were down with the same complaint. I hurried to get a bottle from Mr. Routly, the chemist, in Susan’s Road, and began giving it in small doses. In less than twenty-four hours the child began to eat, the sickness stopped, and we could see a change for the better. We kept on giving the Syrup, and in two weeks Annie was well as ever, and fast getting back her flesh. Since that time—now four years ago—she has never been ill. We consider that Mother Seigel’s Syrup saved her life. You can publish this statement and refer anyone to me. (Signed) Mrs. Annie Alexander, 35, Melbourne Road, Eastbourne, August 1st, 1895.”

“My son Joseph,” writes Mr. Joseph Bond, of Salter’s Green, Mayfield, Sussex, “was never strong. He did not come on like other children. He was weak, sickly, and puny. He ate but little, and was usually in pain until he vomited most of it up again. Nothing gave him strength. In February, 1894, his feet and ankles began to fester. Next three abscesses formed on his neck and under the chin, making deep holes. He was merely skin and bone. The abscesses seemed to be exhausting his life’s blood. He was in a doctor’s care five months, but got no better. From July (1894) he had four months’ treatment at the Tunbridge Wells Hospital without benefit. The doctors gave him medicines and cod-liver oil, but nothing strengthened him.

“In December (1894) I concluded to take the case into my own hands and gave him a medicine that had cured my wife—Mother Seigel’s Syrup. To our astonishment and delight he began to improve in a few days. He could eat, and was stronger for it. We kept giving him the Syrup, and he grew better every day. The abscesses soon healed, and he is now a fine healthy boy, nine years old, and strong for the first time since he was born. Publish this letter if you wish and refer inquirers to me. (Signed) Joseph Bond, July 26th, 1895.”

What, now, is that mighty fact in morals? Ask yourself the question. What justice was there in the suffering of these two little children? For whose sake was it? Why do the majority of the human race die in infancy and childhood? That bundle of laws and forces called “nature” has no pity, no mercy. Obey and live; disobey and perish, that’s the whole story.

Then how does Mother Seigel’s Syrup cure? It cures by bringing the diseased and suffering body back where nature’s hand can reach it. *It puts the derailed coach back on the rails, it re-launches the stranded ship.* The radical trouble of both Annie Alexander and Joseph Bond was of the digestion, the first (a mere baby then) having been seized with acute indigestion, and the boy having, as his father tells us, been born with a feeble stomach. Hence, in his case, the bad blood and the abscesses by which nature sought to remove it. Will parents take warning from these instances? I hope so. Watch the little ones and use Mother Seigel’s Syrup whenever you see them inclined to droop or languish.

MARKET SUPPLEMENT.

SATURDAY, JANUARY 23, 1897.

COFFEE.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending December 30th, 1896, says:—The Bank rate remains at 4%. Bombay Exchange closes at 1s 3 $\frac{1}{16}$ d. Brazil Exchange 8 $\frac{3}{8}$ d. Rupee paper 3 $\frac{1}{2}$ % 63 $\frac{3}{4}$. Silver 29 $\frac{1}{4}$ d per oz.

The fortnight under review contained only one day of Public Sales when the market was quiet without any material alteration in prices. Fine qualities are scarce and realize good prices, whilst other descriptions are neglected. Brazil markets are steady.

Daily receipts have averaged 11,357 bags in Rio, and 12,643 bags in Santos.

Futures have advanced 1s 9d owing to reduced receipts in Brazil, and a report from Rio of excessive heat and want of rain, but the market closes weak, a shade under the highest, viz.:—Good average Santos in Havre, March delivery closes at fcs. 62.75, in Hamburg pf. 51 $\frac{1}{4}$, and No. 7 low ordinary Rio in New York \$9.70.

To-day's London official quotations are:—

	Jan.	March	May	Sept.
Rio ...	48/-	48/6	48/6	—
SANTOS ...	51/3	51/9	52/3	53/-

We quote:—

Ceylon, mid. to good mid. 104/@115/	Costa Rica, mid. to fine... 93/@107/
Do. small to low mid. 87/,, 102/	Do. ord. to low mid. ... 77/,, 91/
East India, mid. to good mid... 97/,, 106/	Jamaica, good to fine ord. 71/,, 80/
Do. small to low mid. 87/,, 94/	Do. greenish to fine colory... 88/,, 122/
Guatemala, mid. to fine... 92/,, 105/	African ... 43/,, 45/
Do. good ord. to low mid... 74/,, 91/	Columbian, ordinary ... 66/,, 71/
Salvador, good ord. foxy greenish... 72/,, 73/	Do. good ord. to low mid... 72/,, 91/
	Do. mid. to fine... 92/,, 105/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
Rio ...	2,173,000	1,588,000	1,468,000
SANTOS ...	3,580,000	2,369,000	2,761,000
	5,753,000	3,957,000	4,229,000

Movements of Tea in United Kingdom from 1st Jan. to 30th Nov., as shown by Custom House Returns.

	IMPORTS.			HOME CONSUMPTION.			EXPORTS.		
	1896.	1895.	1894.	1896.	1895.	1894.	1896.	1895.	1894.
BRITISH E. INDIES ...	109,310,676	105,858,458	103,757,316	111,693,135	106,184,225	107,588,679	3,627,775	3,609,028	3,156,913
CEYLON ...	88,091,956	78,927,377	71,886,769	74,024,542	69,030,999	67,119,464	7,417,677	6,535,211	4,795,312
CHINA ...	32,953,526	37,218,262	39,106,619	18,405,611	24,643,501	21,192,648	17,944,228	16,715,380	20,342,180
OTHER COUNTRIES ...	7,124,671	8,036,425	5,147,331	4,510,330	4,966,768	2,549,278	976,847	924,722	1,030,726
TOTAL lbs. ...	237,480,829	230,040,522	219,898,035	208,633,618	204,825,493	198,450,069	29,966,527	27,784,341	29,325,131

Indian. The only sale held this week consisted of 7,389 packages brought forward on Monday. These were mostly sold with good competition but without change from last week's rates. Some good Teas from Assam were represented in the auction. The following averages may be mentioned:—"Empire of India and Ceylon Tea Co., Sonajuli," 1/1 $\frac{1}{4}$; "Debrooghur Combination Co.," 1/1; "Castleton," 1/0 $\frac{1}{4}$.

Week's av. Tea sold on Garden Account, 1896, 5,230 pks., av. 8d.

1895,	pks., av.	d. 1894,	pks., av.	d.		
			1896.	1895.		
			Pkgs.	Price.	Pkgs.	Price.
Assam ...	...	...	2,956 p	9	—	—
Cachar and Sylhet ...	...	...	1,512 p	6½	—	—
Chota Nagpore ...	...	...	—	—	—	—
Darjeeling ...	...	...	67 p	1/0½	—	—

Auctions:—

6 casks and tierces 5 barrels and bags Plantation Ceylon ...	@ 88/	@ 112/
3 casks 1 tierce Native Ceylon bought in. ...	78/	—
40 bags Lahat ...	71/	—
115 bags Costa Rica, part sold ...	72/6	94/6
363 bags Columbian, chiefly sold ...	86/	—
25 bags Bolivian ...	—	—
478 bags African bought in. ...	—	—
7 bags Liberian bought in. ...	—	—

On Quay Terms:—

34 bags Rio ...	@ 45/6	@ —
Landed last week 218 tons. Deliveries 263 tons. Stock 8,285 tons.		
Do. last year 169 " " 243 " 8,197 "		

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of December 23rd, 1896, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1896-1897... 941,308 packages.	646,787 packages.	23,471 packages.	
1895-1896... 912,429 "	555,783 "	31,062 "	
7,389 pks. INDIAN	Total 23,342 packages were offered in public auction this week.		
15,953 " CEYLON			
— " JAVA			

Figures compiled by the Custom House, showing the imports, Home Consumption, and export of Tea from the commencement of January, are given below.

The progress thus shown in the Home Consumption of all Tea is encouraging, especially so in regard to Indian and Ceylon Tea, both of which show very substantial increases over the quantities previously taken. The falling off in the use of China Tea on the other hand is very marked.

The export of all Teas shows a slight increase.

Comparative prices of Indian Tea in London:—

	1896.	1895.	1894.	1893.
	Pkgs.	Price.	Pkgs.	Price.
DUST. (Fair ordinary, dark liquor) ...	495 p	7 $\frac{1}{2}$	—	—
FANNINGS. (Red to brown, strong rough liquor) ...	54 p	5	—	—
NEILGHERRY ...	146 p	10	—	—
TERAI ...	—	—	—	—
TRAVANCORE ...	—	—	—	—
BROKEN TEA. (Brownish to blackish, strong liquor) ...	6 $\frac{1}{4}$ d	6d	7d	6 $\frac{1}{4}$ d

SUPPLEMENT TO PLANTING OPINION.

PEK. SOUG.	(Blackish greyish, useful liquor).	1896. 6½d	1895. 6½d	1894. 8d	1893. 6½d
PEKOE.	(Greyish to blackish, some tip, useful liquor)	... 7½d	7¾d	9d	7¾d
PEK. SOUG.	(Blackish greyish, inferior liquor).	4¾d	5¼d	6½d	5¾d
PEKOE.	(Blackish greyish, some tip, inferior liquor)	... 5½d	5¾d	7¼d	6¼d

Ceylon. Tuesday's auction comprised 15,953 packages. Bidding was not very animated and quotations were rather below last week's prices, the slackness in the bidding being probably caused by the near approach of Christmas and the difficulty of reselling the Teas so near the Holidays. The quality was partially responsible for some of the lower quotations, as well as to some extent for the fall in the average price.

Average for week 7½d. against 9d. for same period last year.

Comparative prices of Ceylon Tea in London:—

		1896.	1895.	1894.	1893.
PEKOE SOUG.	(Ordinary leaf; fair liquor)	... 6d	6½d	7½d	6½d
PEKOE	(Ordinary leaf, little twist; fair liquor)	... 7¼d	7¾d	8¾d	8¼d
PEKOE SOUG.	(Rather bold leaf; indifferent liquor)	... 4¾d	5¼d	6½d	5¾d
PEKOE	(Somewhat bold leaf; indifferent liquor)	... 5½d	6d	7d	6¼d

Java. Javas were not represented in the auction. Catalogues so far are only issued for a small sale to take place in the early part of January.

Bank Rate 4 per cent. Exchange on London three months sight.—
Calcutta 1/3-⁹/₁₆, Colombo 1/3-⁹/₁₆.

PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8d.) December 23, 1896.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust and Various.	
			Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Nilgiris	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Madanaad	...	...	...	...	...	...	...	...	...	...	...	...	...	...
	146p	10	40½c	11½	21	8½	38b	4	22	8	...	...	25½c	½*

[* Sic.—ED., P. O.]

Table showing Movements of INDIAN TEA (in lbs.) in London during the Season Years 1893-94 to 1897-98.

	IMPORTS.			DELIVERIES.			STOCK.		
	1893-94.	1894-95.	1895-96.	1893-94.	1894-95.	1895-96.	1893-94.	1894-95.	1895-96.
INDIAN	114,047,595	115,045,443	117,932,193	115,683,327	114,705,198	120,742,734	28,492,971	28,815,375	26,750,610
CEYLON	72,626,548	74,044,738	81,870,054	71,076,222	74,868,706	81,034,372	18,490,690	17,721,752	18,557,534
JAVA	2,612,890	4,010,440	3,847,410	2,968,910	3,740,240	3,797,220	667,310	937,510	987,700
CHINA	54,304,515	46,666,598	41,098,167	50,762,644	46,750,384	41,169,439	19,861,486	19,710,881	19,639,616
TOTAL FOR SEASON	243,591,548	239,767,219	244,747,824	240,491,103	240,064,528	246,743,765	67,512,457	67,185,518	65,935,460

Table showing Movements of CEYLON TEA (in lbs.) in London during the Season Years 1893-94 to 1896-97.

TOTAL FOR SEASON	72,626,548	74,044,738	81,870,054	71,076,222	74,868,706	81,034,372	18,490,690	17,721,752	18,557,534
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ADDISON & CO.,

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	RS.	A.		RS.
Estate Check Rolls	6	0	Chesterman's Metallic Tapes, best quality, 50 ft., Rs. 7-0 ; 100 ft....	10
Pocket do.	1	0	Sill's Flexible Blotter (the best hand blotter known).	3
Faber's Office Pencils, H. B. & B. (soft and medium), per doz.	0	8	Addison & Co.'s London-made Blue-black Ink, qts.	1
Faber's American Rubber Bands, per box, 10 as., 14 as., Re. 1-4 &	4	8	Stephen's Blue-black (Copying or Writing), quarts...	2
Faber's Ink and Pencil Erasers	0	6	Do. do. pints...	1
Penholders, per doz., 5 as. to	3	0	Do. Violet-black Copying ... quarts...	2
Pocket Memo. Books, 7 x 4½, limp cloth, leather backs 8 as. to	1	0	Do. do. pints...	1
Pocket Cash Books, do. 8 as. to	1	0	Field's Non-corrosive Black Ink ... quarts...	3
Letter Clips ... 4 as., 6 as., 8 as., 12 as. &	1	0	Do. do. do. ... half-pints...	1
Superior White or Pink Blotting Papers, per quire, Rs. 2-0 to	3	0	Field's Treble-strength Copying Ink half-pints...	1
			McNiven and Cameron's, Mitchell's, G. Brandauer's, Gillott's, Perry's, and Walter & Co.'s (Centric) pens in small and gross boxes ...from 7 as. to	3

Pocket Books, Note Books, Wallets, Cash Books, Ledgers, Journals
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"Bee" Timepiece, nickel	3	6	12-inch Drop Octagon Clocks, pendulum, nicely- finished, and very good timekeeper ...	23
Do. gilt	3	12	12-inch Octagonal Lever Clocks, do. ...	27
"Princess" Timepiece, one day, 3½" dial, nickel ...	3	4	Gothic Pendulum Clocks, 5" dial ...	19
"Princess," 8-day, 4" dial	10	0	Enamelled Iron Clocks, with fancy or plain dials, from Rs. 26-0 to	40
"Princess," one-day, alarm	5	4		
Fancy Timepieces, one day, in bronze, nickel, and porcelain from Rs. 4-4 to	16	0		

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PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, FEBRUARY 6, 1897.

[No. 3.]

MANAGER'S NOTICE.

Back Numbers: A few odd back numbers of 1896 for sale at four annas each.

Back Number Wanted: One copy of No. 16, for which one rupee will be paid.

Offered: A few back numbers of 1896 at eight annas per copy.

N.B.—It is particularly requested that the names and addresses of the *senders* be legibly written on the covers of the papers despatched.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 19th February 1897.

S. E. Wynaad. PUNDALORE, 3rd February.—*Weather.*—By day it is very hot; at nights cool. *Crops* completed. *Plant-diseases.*—Leaf-disease passed off. *General Health.*—Good. *Labour.*—Fair. Grain pretty cheap.

South Wynaad. SULTAN'S BATTERY, 30th January.—*Weather.*—Has been fine since beginning of month and no rain. *Crops* nearly completed, in most cases under

the estimate. Stripping and pruning going on. *Plant-diseases.*—A little leaf rust on some parts of old coffee. *General Health.* Just beginning to get unhealthy, and several coolies down with fever.

Central Travancore.

PEERMAAD, 30th January.—*Weather.*—Fine and dry with very little wind. No rain at all this month. *Crops.*—Tea as usual at this time of year not flushing much. Coffee crops rather below estimates. *General Health.*—Good. *Labour.*—Sufficient, but more coolies would be advantageous.

Coorg.

POLLIBETTA, 2nd February.—*Weather.*—Fine with east wind on some days, but there were a few days when there was hardly any perceptible wind, and yet no clouds. There were passing clouds from 20th to 22nd ultimo. It is getting hot. *Crops.*—Mostly all gathered, but gleaning is going on. *Labour.*—Plentiful. *General Health.*—Still some bowel-complaints and fever about, but there has been a decided improvement.

Nelliampathy.

1st February.—*Weather.*—Very hot in the middle of the day and very little wind; land wind seems lost. *Labour.*—Most estates have paid off, crops being light (nearly as light, but not quite, as the U. P. A. report makes out, 4 edingalies from 3 acres!); work was early finished. In openings there is still lots to be done, and Malabar labour still to be had freely. Pitting has this year been carried on very late and only this week has it stopped on account of the hardness of the ground. *Plant-diseases.*—"Leaf" is bad on a few young places, but for the most part it is where the pitting has been bad, it would seem. *Health.*—Fair: not more sickness than is to be looked for here at this time of the year. *Roads.*—Still in their usual disgraceful state, and the general topic of conversation is about who is to be the next to fall through a bridge! We have had the Cochin road "boss" up, but, although he has spoken nicely—I am afraid its like the proverbial new broom,—only it won't last so long!! *Water.*—There remains a fair quantity yet, but for how long there will be is the question. Scarcity of water is the bane of the district, and it is very creditable, being as it is, that the consumption of *aqua fortis* is not larger!!

PHELPS & CO., Fashionable Tailors and Costumiers, 16, Old Court House Street, Calcutta. (Ladies' Department: 4, Russell Street.)

Nilgiris.

SHOLUR, 1st February.—No rain during month: highest and lowest temperatures between 6 A.M. and 6 P.M. since last report 72° and 42° respectively. Pruning and hoeing in full swing and cold weather repairs in hand. Health good and labour plentiful.—Ragi 14—25 seers per rupee at Sholur village.

COONNOOR, 4th February.—Weather.—No rain save a few cents some ten days ago or so. Bright hot days and cold nights. Very mild cold weather this is proving. Crops.—Coffee backward in parts and wants rain to ripen up; but spike being very forward, its just as well its keeping dry. Grain still unduly high. Tea flushing poorly and pruning well on everywhere. Outturn of parchment to ton much better here than at Kotagiri this year, in one case as high as 93 b to the ton. Plant-diseases.—Late go of leaf-disease doing a lot of damage to this year's bearing wood. Red spider on tea beginning again. Porcupines doing lots of damage on tea, brutes! General Health.—Indifferent. Labour.—Ample.

GENERAL NOTES AND ARTICLES.**THE ADMINISTRATION OF TRAVANCORE.**

If it is an advantage to an individual to be taken at his own estimate as regards intelligence and worth, it is an advantage also for a State to be taken at the valuation put upon it by its chief officials, the men whose reputations are made or lost according to the apparent success or failure of their administration of public affairs. This advantage has fallen to Travancore. Officials have cried it up, and the few men who have cried it down, have themselves been cried down as "agitators," as men who are consistently "ag'in the Government;" almost, in fact, as rebels. Officials have reported on the excellence of the Administration; and what the Brahman official has set down in reports, the British Resident has usually been quick to endorse. Let it be admitted, too, that the modicum of truth so essential to the success of tactics of this kind is not wanting in Travancore. Several matters might be mentioned in regard to which Travancore is fully abreast of the times. To bring these to the front, to slur over things that reveal a less progressive policy, and to keep out of sight all that points to retrogression or even to an absence of progress—this is the art of the Brahman official, and the British Resident has usually praised all specimens of artistic work of this kind that have been brought to his notice. Nor is this all that has caused the Government of Travancore to acquire high repute as a progressive Administration. For men who might have spoken with weight against it have been for the most part silent, content not to grumble when they were powerless to amend, not to remonstrate where the remonstrances of their fathers or their predecessors had not been heeded. Indeed, such adverse criticism as the Travancore Government has received has been from extremists, and the obvious exaggerations indulged in have not merely deprived this criticism of weight, but have even had a tendency sometimes to make it tell in favour of the very Administration it was aimed against.

It would be pleasant to think that this state of things was about to be changed. We would gladly see some of the light of public criticism of the highest kind thrown on "The Model State;" and even though there is little indication that this will occur, except as a mere accident, so to

speak, we are glad to note any informed criticism that tells us that the optimism of officialdom in Travancore is delusive, just as the pessimism of prejudiced critics is misleading. An instance of this kind of criticism is to be found in the report of the annual meeting of the Central Travancore Planters' Association, given on another page. Mr. GRANVILLE L. ACWORTH, the Honorary Secretary, should, from his knowledge and experience as a planter, be able to weigh the "pros" and "cons" of arguments concerning Administration in Travancore as well as most officials and better than any 'outside' critic. For a long time the Association to which he belongs has been silent about the broad question whether the local Administration is good or bad. As Mr. ACWORTH remarks the matter has been regarded as rather outside the province of such an Association. And this rightly. But circumstances have so far changed that there is now a risk of prolonged silence being misinterpreted. Communications to the Press have taken such a form that further silence would involve a tacit expression of approval of the Administration on the part of Mr. ACWORTH himself, and perhaps his Association also. Realising this, Mr. ACWORTH has spoken, and there is no trace of an effort to run with the hare and hunt with the hounds in the moderation he displays in his handling of a delicate and complex subject. The main trend of his remarks is to show that while Travancore is not as well administered as it has often been represented to be, and as official reports would lead all the world to believe, the condition of affairs is not absolutely hopeless. Past silence must not be taken as pointing to satisfaction with the way in which things have been, or are done. Present speech states plainly that in regard to several matters Mr. ACWORTH, personally, is very far from satisfied; and while it cannot be expected that every planter in Travancore shall take precisely the same view of matters as the Honorary Secretary of the C. T. P. A., it is probably safe to assume that he has the majority on his side.

Defects in the administration are more hinted at than pointed out in Mr. ACWORTH's remarks. The present Dewan, we are told, is no worse and no better than the generality of Dewans of Travancore. Mr. ACWORTH evidently thinks it a mistake to select Dewans locally; but this is a point about which there must necessarily be great difference of opinion. What is mainly urged is that Travancore is a country that is undeveloped. The large annual surplus shown in accounts is not utilised for the further development of the resources of a resourceful State. The financial test alone is the test by which each Administrator seeks to be, and is, judged. A deficit would be taken to mean maladministration; a handsome surplus is conclusive proof that things have been well managed. And then, there is a preponderance of Brahmanism: the ultra-conservative Brahmanism of "the old school." These and other defects are sketched into Mr. ACWORTH's outline (for it is little more than a sketch) of critical observations. To those who have studied Travancore reports without prejudice and watched the progress of affairs in the State with interest, there is clearly truth in what is said. It need not be said that all official reports are too highly coloured, nor yet that writers like those referred to by Mr. ACWORTH as having praised the Administration, or admirers like Baron von ROSENBERG, of Nor-

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N.B.—Advertisers should state exactly the number of insertions required, failing this the advertisement will continue running until stopped and will be charged for accordingly.

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European Dairy. Oaklands Coffee Estate Dairy, 600 acres, with good grazing. To open 1st March 1897 under European management and with the latest machinery. Quality under strict guarantee. Butter Re. 1 per lb., including Freight charges. Orders now being registered.

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61.50 lbs. Nitrogen
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14.92 „ Lime
13.68 „ Phosphoric Acid.

Orders should be booked early for the present crop of seed from the parent trees of above analysis. Price Rs. 3 per 1,000.

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Razors. The undersigned undertakes to turn out old razors as good as new, i.e., with the perfection of a keen cutting edge guaranteed, for a small charge of eight annas and upwards, according to quality and temper of steel. The undersigned is importing the latest machine for this purpose.

The minimum charge will however be Re. 1 on each parcel of razors, postage extra. Do not allow any Native barber or knife grinder to touch your razors. They almost invariably spoil the temper, and although they may put on a keen edge, it will only last for one or two shaves.

A. R. ROSLING & CO.,
MILLER'S ROAD,
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Ittithorai Coffee Estate. FOR SALE.—The Ittithorai Coffee Estate above Kullaar Railway Station on the Nilgiri Railway. Elevation 3,000 feet; 68 acres land, of which 20 in Coffee. Planted 1890. Looking fine for next Crop. Price Rupees 10,000, of which one half can be secured by a Mortgage on the property.

Apply T. BROWN,
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For Sale. A small coffee property in Mysore, with a block of good jungle.

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FOR SALE. A BARGAIN.—A block of 210 acres of good Coffee Land in the Nilgiri District, planted with 20,000 4-year old coffee trees. No difficulty about labour. Grazing plentiful. Manure 1 a. per bushel delivered.

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Government Road from Coast to Mysore bisects the Property which is moreover bounded on the North and West by large rivers, each containing ample power throughout the year to drive Overshot Water Wheels.

The greater portion of the land faces North, North-East, and North-West, with a very easy lay, and the soil is admirably fitted for the growth of Arabica and Liberian Coffee, as well as of Tea. For further details apply to 303, C/o MANAGER, *Planting Opinion*.

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Travancore, and Messrs. FINLAY, MUIR AND Co., of Calcutta, have not written conscientiously. But the letters in the *Opinion* are redolent of the Residency and of officialdom, and for the rest, both sides of the case are deserving a hearing. It would be impossible to weigh or sift the evidence here, and to arrive at a sound judgment we should have to travel far beyond the records cited in Mr. WORTH'S speech on this article. It is sufficient for the present to note that the "fair seeming" of the Administration of Travancore is under suspicion of being only a sheer. It would be well were planters to assist, by calm statements of fact and authoritative revelations of abuses and defects, to bring the actual truth to light, and thus to induce the Government to overhaul its machinery and adopt an improved system of administration.

Binding covers.

In answer to numerous enquiries for special binding covers for Vol. I. *Planting Opinion*, we may point out that these can be obtained from our printers, Messrs. Addison & Co., Madras. Details of prices, etc., will be found elsewhere.

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Notes on pests.

We have just received from our London agents a few copies of Miss Ormerod's Reports on Injurious Insects with methods of prevention and Remedy. Thoughtful planters should be able to extract a good deal of useful information from Miss Ormerod's valuable notes. The pamphlets are some 100 pages in length, and can be obtained at Re. 1-8 each from this office, postage extra.

Cinchona tenders.

We recently pointed out how undesirable it was for Government to effect purchases of cinchona bark by private treaty, instead of inviting tenders. We are now glad to learn that, acting upon a representation made by the U. P. A. S. I., the Madras Government has decided to authorize the Director of Government Cinchona Plantations to invite tenders for such quantities of bark as may from time to time be required to supplement the yield of the plantations. No guarantee will be given as to the quantity annually required, and the prices which will be sanctioned.

Bangalore Dairy.

Mr. Partridge, an irrigation planter of Doddballapur, near Bangalore, is striking out a new line in planting in starting a first class European dairy in conjunction with his other business. He asks us to notice the enterprise, of which an

advertisement gives fuller details, and hopes his brother planters will support him by giving him their custom. Good butter is certainly a very difficult thing to obtain at reasonable prices, and if Bombay butter—which should be tabooed till the plague dies out—can reach Coonoor in excellent condition at the low price of one rupee per pound, there is no reason why Mr. Partridge should not do as well in Bangalore. Good grazing, the latest machinery, and skilled European supervision can do a great deal: witness the excellent Sliev Mor dairy at Ootacamund. We wish Mr. Partridge all success, and hope the planters of Mysore and Coorg will support him heartily.

Gum kino.

A correspondent recently enquired as to the best methods of extracting this gum. The following extract from Dr. Watt's Dictionary of Economical Products should give the information required:

This species yields the gum kino of European Materia Medica. The gum as it exudes has the appearance of red currant jelly, but hardens in a few hours after exposure to the air. It is obtained as follows:—"A perpendicular incision with lateral ones leading into it is made in the trunk, at the foot of which is placed a vessel to receive the outflowing juice. This juice soon thickens, and, when sufficiently dried by exposure to the sun and air, is packed into wooden boxes for exportation" (Hanbury, quoting Cleghorn.) Dymock states that in the Kanara District of Bombay it is collected in little cups made with leaves, and consequently assumes the form of concavo-convex cakes 3 to 4 inches in diameter. These are said to be always broken up and garbled by the wholesale dealers. The supplies are chiefly obtained from the Government Forests in Malabar, permission to extract the drug being granted on payment of a small fee and on the understanding that the tapping be performed skilfully and without damage to the timber.

Illustrations—a new departure.

It had long been a wish of ours to have occasional illustrations in this journal, for illustrating new species or varieties of plants, and reproducing designs of buildings, maps, etc. We are glad to announce that we have now made arrangements to undertake such work, and hope it will be the means of rendering these pages of greater use than ever. We shall not, however, confine ourselves entirely to the severely practical, but shall be glad now and then to reproduce landscapes, pictures of local interest, such as figures of local tribes, and so on. Any help such of our readers who have taken up photography can render us, will be gladly welcomed. In the case of photographs, it is not absolutely necessary that the negative itself should be sent, providing the print is a *clear and distinct one*. In either case the original would be returned intact after use. Something in the way of a description of the picture would add greatly to its interest.

Orange-growing in Coorg.

A correspondent writes:—"In re orange-cultivation in this district, I know of no European in the country who has gone in for the systematic culture of oranges with a view to profit. A few trees are planted about bungalows and perhaps a road or two, and the fruit gets mostly wasted. Much of it is eaten by the coolies to the detriment of their health.

"I don't suppose the cultivation would cost much as I have seen trees bearing profusely without the least attention being paid to them. Especially, one disadvantage about the trees is that they bear during the monsoon; but

it must be remembered that it is then very hot weather in Madras and other places where the fruit would be much appreciated. Natives grow the fruit and sell it to merchants and others who export it; but I don't think that they go in for its systematic culture on anything like a large scale."

Black bug.

For the past two years many Coonoor and Kotagiri estates suffered severely from a bad attack of black bug that suddenly appeared on both coffee and tea, especially coffee. In one case a young extension at Kotagiri was dreadfully damaged, over 2,000 young trees being actually killed out by it, and many more being left very shaky. Curiously enough, since last December, the bug seems to be going off as rapidly as it came on, and this without any application whatever. A correspondent suggests that Mr. Brodie's recent letter on the success of his "cure" is probably explained by the simultaneous disappearance of the pest on untreated estates in the neighbourhood. This again is held, by a Kotagiri planter, to be principally due to the ravages of a parasite that feeds greedily on the bug, probably of the same description as that noted by Mr. Newport on the Lower Pulnies. Will the Kotagiri planter referred to kindly give us details of his discovery?

Planting statistics.

Alluding to the article in our last issue under this heading, a valued correspondent states that the figures furnished to the South of India Enquiry Committee are, for the Nilgiris, as follows:

Coffee	...	...	...	24,570
Tea	...	...	...	6,015
Cinchona (exclusive of Govt. Estates)	...	...	...	6,796
				<u>37,381</u>

There is, besides, probably a considerable extent of small native holdings not included in this return. South Mysore has 39,000 acres under coffee, of which 15,000 acres are owned by Europeans and 24,000 by Natives. By the way, the reason why South Mysore statistics did not appear in the U. P. A. appendix was owing to the change of Secretaries, the necessary forms from this district having been filled in and sent many months ago. We regret these figures were not available to us when our directory was published.

A Coonoor firm.

Among the firms who have so largely contributed to the welfare of this rapidly expanding town, "Lee's Pharmacy" (known before as the Nilgiri Pharmaceutical Company) occupies a high place. When Mr. Standish Lee took over the business in 1893, its reputation was at a very low ebb, but by perseverance and any amount of "go," the new proprietor—who is also manager—has effected a very considerable change for the better. The medical stores, which under the former régime were very musty, are now renewed direct from England every three months, and the quality is undoubted. Besides the pharmacy business proper, most Nilgiri planters are familiar with his excellent soda water, and quite lately he has commenced to lay in a stock of tinned provisions of all kinds, which cannot fail to be a great convenience to his customers. We cannot conclude

without remarking on the encouraging way in which he has helped to foster the latest Nilgiri planting industry,—jam and condiment making. This enterprise was only started a few months ago, but the run on the fresh Nilgiri jams and preserves has been most gratifying, and we hope in the course of a few years more that Nilgiri preserves will be known and appreciated from one end of India to the other.

Value of manure analysis.

To illustrate the unwisdom, put it very mildly, of buying manure without a guarantee. Two samples of castor poonac give respectively 7 and 6 per cent. nitrogen. The difference of one per cent. seems a very small thing, but the practical meaning is that fully eight tons of the latter are required to produce the same effect as seven tons of the former. And as ten to one the purchase price per ton would be the same, it means an actual waste of the money spent on the extra ton; and castor poonac is not cheap. Take fish. The proportion of sand varies from 15 (a relatively good sample) to 50 per cent. Contrast two lots containing respectively 20 and 40 per cent. of sand, allowing the same price for both (and how is anyone to know what one is buying without a guarantee?) a man buying the latter when he can get the former, is just paying *twice too much*. The whole system of calculation is a very simple one, when one remembers that, in buying artificials, you want plant food and not sand or fibre for your money. If buying nitrogenous manures, reckon the value on the nitrogen only. If phosphates, take phosphoric acid as the unit. The following formula will be good enough for practical purposes. If one ton of poonac land on the estate costs —rupees, and the percentage of nitrogen is 6, then —rupees $\div (6 \times 22\frac{1}{2})$ = cost per pound of nitrogen. The lower the percentage of nitrogen, the higher the cost per pound. To ascertain the exact comparative values of mixed manures is rather more complicated.

It is enough for the ordinary planter to bear in mind that by insisting on the manure he purchases being up to guaranteed analysis, he will save himself many hundreds, and in some cases, thousands, of rupees per annum.

Cooly law in Selangor.

The following extract is interesting. Says a Borneo exchange:—
We are evidently "quite out of it" in the way of penal legislation for coolies. The Selangor Planters' Association have drafted the following provisions as to plantation thieves which they wish to become law. Just fancy what would be said if the British North Borneo Company adopted these as Territorial law! "Chartered Companies and their attendant brutalities" would be the order of the day. Yet in Selangor if a man be found in possession of unripe fruit, branch, root or stem of a coffee, cardamom or areca nut (worth about $1\frac{1}{2}$ of a cent) he may be sentenced to 3 years imprisonment or \$1,000 fine; or for a second offence a flogging. Talk of the Native States "humane" procedure after that. At home the culprit would be fined 5s.; in this Territory \$1 or a few days' imprisonment at most. We are not of course blind to the nuisance of petty thefts on plantations. But how anybody profits by taking the unripe fruit of the coffee or betelnut or bark, root, or stem of the same passes comprehension. To run a man in for mischief, as we do, is reasonable. But we must confess ourselves more than astonished by the Selangor Ordinance. quote the paragraphs:—

"Every person found loitering or lurking about any plantation shall, unless he can give a satisfactory reason to the magistrate before whom he is tried for such loitering or lurking, be deemed

They have no pretensions to cheapness, nor do they advance any such claims, but PHELPS & understand their business.

To be worked in conjunction with the above, we have established a register, and names will be entered on application, together with copies of their testimonials. Thus should any enquiries be made for the services of a manager, assistant, &c., the names and testimonials will at once be forwarded, saving delay and trouble. Subscribers may have their names entered free; others will be charged a fee of one rupee.

BILLETS OFFERED TO.

Field Overseers. Field Overseers from November 1896 in opening new clearing. Salary Rs. 20 to 25 per mensem. Natives only need apply.
Apply to A. H. SHARP, Esq.,
Devikulam.

Coffee Writer. Wanted on a Coffee Estate an Under-Writer who understands field work and accounts. Must be young, active, and willing. Must speak and write English well. A labour connection is necessary. No one without these qualifications need apply. Good salary.
M. A. T., C/o this paper.

BILLETS WANTED BY.

Managing Share. WANTED—By a planter of long experience a share with management, or management of a large Coffee Estate. Thoroughly reliable man, of business habits. Can furnish excellent testimonials. Would suit owner retiring, or absentee proprietor.
Apply to NEMO,
C/o Editor.

Manager. WANTED a situation of trust as manager by a European Gentleman with over 10 years' experience in Coffee or Tea. A temporary billet for say 6 months, Rs. 400; permanent Rs. 250 per mensem at first.
Apply F. O. B., C/o Manager.

By young European Planter. WANTED employment as Manager or Superintendent of a Coffee Estate. Five years' practical Experience in South Mysore. Excellent Testimonials. Salary Rs. 150.
Apply E. P. L.,
C/o Editor.

A Surveyor. Of 25 years' experience, trained in the Imperial Survey Department of India and Engineering College, Roorkee, is prepared to undertake extensive Trigonometrical, Topographical and Engineering Surveys and Levelling and make working plans on the largest scale at somewhat the same rates as the Government Cadastral Surveys which will vary with the area and scale of the survey and amount of detail required.
Full particulars on application to
A. HALL,
C/o Editor.

Young Tea Planter. WANTED position of Trust or Assistant on a Tea or Coffee Estate in S. India. Has had two years' experience in Assam. Is willing to work 6 months without a salary till he has learnt local conditions. Good references.
"A. K.,"
C/o Editor.

Tea or Fruit. WANTED an appointment as Manager or First Assistant in tea or fruit. Ten years' practical experience, well up in the cultivation and manufacture of tea, and also in the management of English fruit trees. Bachelor, age 29, active, hard working, sober habits, excellent testimonials and information from the Manager of this paper. Can join at once.
KUMA.

By Young Planter. WANTED a billet on Coffee Estate by young planter of three-years' experience under well-known planters. Excellent testimonials.
"ROCHESTER,"
C/o Editor.

Young Coffee Planter.

Three.

WANTED by a young planter, charge of a Coffee Estate. Experienced in all branches. Salary Rs. 200.

"D. D.,"
C/o Manager.

Coffee Planter. WANTED a situation in Coffee as Superintendent or Manager by a European with over twenty years' experience.
Apply D.,
C/o Manager.

Superintendent. WANTED a billet as Superintendent of a Coffee Estate by a planter of 14 years' experience; testimonials and references given if required.
Apply PADDY,
C/o this Paper.

Tea Planter. In 5 to 6 months time by a Managing Proprietor about to sell property, an appointment as Superintendent of a Tea Estate or a large tea house preferred. Mincing Lane and Assam experience. Command of Labour.
Apply T.,
C/o this Paper.

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BRASS SEALS FOR WAX SEALING,
MONOGRAM, CREST OR ADDRESS DIES,
ENGRAVING OF ANY DESCRIPTION.

ADDISON & CO., MADRAS.

USE JADOO FIBRE

for Coffee, Tea, Cinchona, Tobacco, Oranges, Indigo and Sugar Cane.

Vide Leading Article in *Madras Mail*
of 9th September 1896.

JADOO FIBRE is not a Chemical Manure.

It encourages fibrous roots but never exhausts the plant.

For full particulars apply to

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CALICUT PRICE LIST

OF

ESTATE REQUISITES.

N.B.—We are prepared to indent home for any and all kinds of estate requirements not kept in stock or enumerated in this list.

ESTATE TOOLS—				Rs.	A.	P.
Round Eye Felling Axes, 4 lbs. weight	per doz.	...	24	0	0	
Do do 2½ " "	"	...	17	4	0	
Pickaxes, 6½ lbs.	"	...	22	8	0	
Barcutties or Bill Hooks	"	...	20	4	0	
Bushel Measures, (Galvanized)	each	...	20	0	0	
Buckets, (Galvanized) various sizes, from	per doz.	...	15	0	0	
Watering Cans, do. do.	"	...	36	0	0	
Steel Digging Forks, 4 & 3 pronged, per doz.	Rs. 42 12 0 &	36	0	0	0	
Grass Knives, Socket handle...	per doz.	...	15	0	0	
Do. Our own make (with handle)	"	...	12	0	0	
Handles, Pickaxe, 3 ft. long (English Ash)	each	...	1	0	0	
Do 30" long 3¾" circ. (do)	"	...	0	8	0	
Do 16" " 3" (do)	"	...	0	6	0	
Do Digging Fork	"	...	1	0	0	
Mamooties, Steel 10" x 8" abt. 4 lbs. wt.	per doz.	...	15	12	0	
Do do 9" x 7" " "	"	...	14	4	0	
Do Iron 10½ x 8½ abt. 4 lbs. wt.	"	...	7	4	0	
Do do 9½ x 8 " 3½ "	"	...	6	8	0	
Manure Pans, (Galvanized)	"	...	30	0	0	
Pitting Bars (spade end)	"	...	21	0	0	
Pruning Knives, Best English make	"	...	12	0	0	
Do Our own make	"	...	8	4	0	
Pruning Saws, 14" & 12"	per doz.	Rs. 20 4 0 &	15	0	0	
Seamless Bags	"	...	"	"	"	

TEA REQUISITES—

CHESTS—MADE TO ORDER.

Delivered at Mettapollium, Palghat or Calicut.

Full Chests 24 x 19 x 19 (outside) ½ in. planks	each	1	2	0
Half do 16 x 16 x 16 (")	do	0	14	0
Quarter do 14 x 12 x 10 (")	do	0	9	0

Any other dimensions at proportionate prices.

LEAD—BEST INCORRODIBLE.

In cases of 2 cwts. each.

Containing 127 sheets 37" x 22"	per case	37	8	0
or 218 25" x 19"	"	"	"	"
84 x 22 with tops and bottoms 21 x 16	"	40	0	0
65 x 19 " 14 x 14	"	40	0	0
Solder	per lb.	1	0	0

HOOP IRON—

1½" 7/8" ¾" ...	per cwt.	7	8	0
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COFFEE PULPERS—Supplied to order only.

Agents for:—MESSRS. WALKER SONS & Co., LD.

Single Disc	Nominal.	350	0	0
Double " (without back Gear)	do	650	0	0
Treble	do	860	0	0

One month required for delivery in Calicut.

IRON—GALVANIZED.

Continuous Iron. For roofing, &c.				
In rolls of 100 ft. x 2 ft. 28 G.	per roll	47	0	0
	per sq. ft.	0	4	3
Corrugated Iron sheets 24 G. 2 ft. wide				
5, 6, 7, 8, 9 & 10 ft. lengths, per cwt.		11	0	0
Iron Ridging, 6 ft. x 6 inch lap.	per length	1	8	0
Bolts and Nuts, ½" x ¾"	per gross	2	8	0
Rivets (abt. 64 to the lb.)	per lb.	0	5	0

IRON—GALVANIZED—continued.

Washers (abt. 70 to the lb.)	per lb.	0	5	0
Screws 2½ in. (abt. 28 to the lb.)	"	0	8	0
Nails 3 in. (abt. 25 to the lb.)	"	0	4	0
Washers (not galvd. old) 7/16", ½", 9/16"	"	0	2	6

NAILS—

Cut Rose Nails 1 in (abt. 525 to the lb.)	per lb.	0	3	6
Do 2½ in (" 90 ")	"	0	2	6
Do 4 in (" 18 ")	"	0	2	0

Iron Tacks	"	0	2	0
Ewbanks Nails, 2 in (thin) (abt. 90 to the lb.)	"	0	2	6
Do 3 in (") " 55 ")	"	0	2	0
Dogear Nails, 3 in x ⅝ in. thick (abt. 7 to the lb.)	"	0	2	6

Wire Nails, French.

1½"	2"	2½"	3"	4"
Rs. 12/8	12/0	11/8	10/12	10/8
per pound annas	2½	2½	2	2
Nails per lb. (abt.)	200	160	100	80
				35

Triangular Barbed Wire Nails.

1" x 13 G.	Rs. 14	8	0	per cwt. Keg.
1½" x 11 "	"	13	0	0
2" x 10 "	"	12	8	0
2½" x 10 "	"	12	8	0
3" x 9 "	"	12	0	0
4" x 6 "	"	11	0	0

WINDOW GLASSES—

12x10, 14x12, 16x14, 18x16, 20x18, 22x20, 24x22, 26x24, 28x36 & 36x30. (Small quantities extra.)	per Case of 100 sq. ft.	14	0	0
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PORTLAND CEMENT—John Bazely White and Bros.

" Whites "	per barrel of abt. 400 lbs. gross	11	12	0
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Sole Agents for S. Canara, Coorg, Malabar, Coimbatore, Travancore.

TAR & PITCH—

Coal Tar	per barrel of about 4 cwts. gross	20	0	0
" Pitch	"	15	0	0

ASPHALTE

per ton	75	0	0
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COIR MATTING—

In rolls of 60 feet long x 3 feet wide.
Superior and Fine Machine-made Yarn. Ordinary Bungalow Twill.
(Coloured stripes to order) also Estate Double in 3 qualities and Shade. Prices on application.

PRINTING—

All kinds of Estate Weekly and Monthly Report and Account Forms, executed at our KARAPURAMBA PRESS.

MINING REQUISITES—

Screens for Stamp Boxes, 25½"x17½", 196 holes per sq. in. No. 8 size	per doz.	36	0	0
Tram Wagon Wheels—Cast steel, 12" dia. 2½" tyre	per pair	17	8	0
Axles for ditto length 2 ft. 9 in. (incl. tree)	each	10	0	0
Wheels with axle, for Barrows, Malleable Steel. 17" dia. 1½" tyre	"	8	0	0
Shovels, Round nose, T handle...	per doz.	27	0	0
Nails 3" x ⅝" Railway wrot dogear	per lb.	0	2	6
Hammers, 5, 6, 7, 8, 9, & 10 lbs.	"	0	6	0

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MANURES.

Steamed Bone Meal.

Fish Guano.

Whole Fish.

Nitrate of Soda 95% soluble.

Trichinopoly Phosphates.

Poonacs:—Ground Nut and Niger Seed, Castor, Hoongay, Mowra.

Sulphate of Ammonia 24%.

Mixtures can be made in any proportion without extra charge. Also packing to suit transport by bullocks, etc.

Prices will be furnished on application for delivery either at our Karapuramba Works, Calicut, the Calicut Railway Station, or at our godowns in Cochin, Tellicherry, Mangalore and other places.

Quotations will be obtained and orders booked for Basic Slag or Phosphate, Kainit Salts, Muriate of Potash, Nitrate of Potash, Sulphate of Potash, Saltpetre, Superphosphates of Lime, 15% Phosphoric Acid, Superphosphates 40%, Soluble Phosphates, and any other Manures not kept in stock. Approximate Analyses of these can be had on application.

ilty of an offence, and shall be liable on conviction before such magistrate to imprisonment of either description for any term not exceeding six weeks, or to a fine not exceeding twenty-five dollars.

Whenever the unripe fruit of the coffee or cacao tree, or of tea cardamom plant, or of the arecanut palm, or the bark, whether the branch, root, or stem, of the cinchona tree, shall be found in the possession of any person who is unable to give a satisfactory account of his possession thereof, such person shall be deemed guilty of an offence, and shall, on conviction before a magistrate, be liable to imprisonment of either description for a term not exceeding three years or to a fine not exceeding one thousand dollars, or to both, and for a second or subsequent offence shall also be liable to whipping. It shall not be lawful for anyone to purchase or take in barter, exchange, or receive, any produce from any labourer employed on any plantation.

Any person committing any breach of any of the provisions contained in the 5th section of this Enactment shall be deemed guilty of an offence, and shall be liable on conviction before a magistrate to imprisonment of either description for any term not exceeding six months or to a fine not exceeding one hundred dollars, and for a second or subsequent offence shall also be liable to whipping."

Rhea on the Nilgiris.

A burnt child dreads the fire, and the failure in the experiments carried out some ten to twelve years ago in the Bowani valley and E. Wynaad have the very natural effect of deterring local planters from trying their luck again. The Glenrock Company carried on their experiments from 1885 to 1888, and about 150 acres were planted with rhea in the Bowani valley alone. *Boehmeria nivea* and *B. tenacissima* were both tried, but chiefly *nivea*, as being the freer grower and more easily propagated. The trials made were thorough and exhaustive, and went conclusively to prove that Rhea could not then be grown and treated by Europeans to pay. Machinery of the best kind was tried, worked by water-power; and also by stripping the ribbons by steaming, and the manufacture of the filasse, or clean fibre, with caustic soda.

The chief financial difficulty arises in the handling of the immense quantities of green stems required to turn out, say, a ton of either ribbons or fibre, the latter only amounting to some 3% of the whole.

Again the market in either ribbons or filasse was most unsatisfactory, and very poor prices were obtained compared with what they were led to expect.

The growth of the Rhea presented no difficulties, the propagation being easy, either by seeds or cuttings. Good soil and plenty of moisture enables it to grow readily. Even in those days, however, a big native-managed industry might have flourished, something on the lines in which the silk is produced in Northern India. The "caterpillar plague," noticed in similar experiments in the Wynaad, was not so disastrous as we imagined. The damage done was real enough, but could be successfully prevented if taken in time.

Times are now changed, and if the recent machinery costs but a tithe of what is claimed for it, the Bowani might again be the scene of more experiments in Rhea. The whole situation hangs on efficient machinery, and until a practical experiment has proved its value, Rhea cultivation is undoubtedly a risky venture. One of the most promising of the machines in the market is M. Faure's, a full description of which we gave in our last issue. The cost is

only £36, and the sole agent for the inventor is Mr. Thos. Barraclough, 20 Bucklersquay, London.

Keep your eyes open.

There are many planters who complain of the dullness, the everlasting routine of plantation work, its monotony and generally unintellectual occupations. To a certain extent all this is true enough, but only to a certain extent. On every side there are avenues for original research and experiment, more than enough to give employment to everyone concerned in the industry. Every single detail of plantation work rests on well-known natural laws: how many of those who complain of the dullness of planting have cared to study these laws in themselves? Let us take digging. Why is the land dug at all? It disturbs the roots: does this matter? But digging does good. Yes, but cannot it do more good if done in other ways.

A planter simply following the routine of estate cultivation, jogging along in its deep old ruts, what can he know of half the real and deep pleasure to be derived from "planting as a science." He keeps his eyes shut, and looks neither to the right nor to the left. Such and such work has to be done, and it is his duty to see it done. As to why it is done, or whether it cannot be done better, is a question for others. He cares for none of these things. And yet, poor dull old hack, he complains of the dull unintellectual side of planting! Keep your eyes open, trace the effect back to the cause, follow the ruts only as long as there is no better track to go by. There are great secrets yet to be won on the field, in the factory and in the curing sheds. Some of them are easy to unravel, others require deep and patient investigation. Do not always bear in mind that deadening so-called business motto: what good will it do *me*? Try and do work more for the work's sake. But if you want to put it on a basis of rupees, annas and pies, the answer is simple and practical enough. Every improvement you effect, every useful discovery you obtain, all add to your value as a planter. Yet do not consider the results of your investigations as profound secrets, worthy but difficult of patenting. Give your experiences freely to others, and you are sure to receive many a useful hint in return, which may lead you to yet further success in your trials and experiments. It is against all principles of trade and commonsense to lock up your knowledge in your own bosom. What would the nations of Europe be without their world-wide system of barter and exchange? Not one of them is self-sufficient, each must borrow and exchange from the other. Your bent may lie in pruning, and by systematic trials and investigations you may rightly consider yourself the authority in your district. But are you as perfect in say cultivation, or manuring, or draining, or building? If you are, well, you are not worth wasting printer's ink on. Yet if not wholly eaten up by self-conceit, you will admit that Green can give you points at cultivation, Brown at manuring, and what's-his-name at draining. Offer your knowledge in pruning and see if they don't gladly give of their best in exchange. Some of our readers in favoured districts may think we are combating a phantasm of our imagination. Sad truth to tell, there is more than one district we wot of, where "ideas" are looked upon as patents, and particular methods as important trade secrets.

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FRUIT CULTURE ON THE NORTH INDIAN HILLS.

SOME interesting facts regarding fruit culture in the hills are given by the Rev. M. M. Carleton in the last issue of the *National Magazine*, published in Calcutta. Mr. Carleton, who is one of the foremost pioneers of the fruit-growing industry in the Himalayas, has made various experiments at Ani, a village in Kulu, 4,500 feet above sea-level and distant 65 miles from Simla. As regards apples, it appears that American and English trees have proved almost a failure. The experiments have now extended over a period of ten years, but though the trees themselves flourish and a few apples are produced, the return is of the poorest. The conclusion arrived at is that apple cultivation will not be profitable at a lower altitude than 6,000 feet. Apricots, on the contrary, have proved a remarkable success. The native tree of the Kulu valley is not very prolific, but the Kashmir and English varieties yield fruit after the fourth year in great abundance. Mr. Carleton strongly advocates the extension of the cultivation of these varieties in all the lower hills; and he suggests the introduction into Simla of the American fruit-drying machines. He believes that enterprising persons could establish a very profitable industry in preparing dried apricots for the Indian markets. American grapes at Ani have done extremely well. Fifteen years ago the Black Hamburg variety was tried, but it turned out a failure. Mr. Carleton, six years later, sent to America for a hardy prolific vine grown on the northern limit of grape cultivation, where the spring opens in May and the frost comes in September. He held that this variety would ripen in Kulu before the heavy rain, because spring begins in the valley early in March. He has now a vine eight years old which yields 70 lb. of grapes. He remarks that a few such vines around the houses of intelligent zemindars in the Simla district would give a handsome return in the local market, especially in the month of June. There can certainly be no question about the great demand for fresh fruit in Simla during the summer months. Experiments with the European orange have shown that the Maltese variety can be grown in the lower hills as high as 4,500 feet. Mr. Carleton thinks a great industry might spring up if the cultivation of oranges was undertaken. From one tree at Ani, eight years old, he gathered 220 oranges last February, which is the month for plucking the fruit, following the Californian custom of leaving the oranges on the trees until the new leaves appear. Snow does not appear to injure the fruit though it affects the leaves. It is pointed out that oranges sold from the Gujranwalla and other gardens fetch from Rs. 5 to Rs. 8 per 100, and it is believed that still higher prices could be obtained for the Kulu fruit in the Simla market during April. If this were so, one tree yielding 200 oranges annually would give the owner a handsome profit, and that on only 10 feet square of ground. It is evident that grape and orange cultivation in the lower hills could be made a very paying industry, but the natives are not enterprising enough to take the matter up. European energy is needed to show them the way, and in the absence of other agency the Forest Department might well step in and give the movement a helping hand. —*Pioneer*, Oct. 3.

THE NILGIRI AGRI-HORTICULTURAL SOCIETY.

WE have received a copy of the Proceedings of the Sub-Committee Meeting of this Society, held at Ooty on the 6th of last month. The show should be a thorough success, if we may judge by the generous list of prizes offered. Flowers of course take pride of place, both as regards the number of prizes (34) and their value (Rs. 113). Vegetables come next with a list of 24 prizes, value Rs. 71; then fruit with 16 prizes of a value of Rs. 59; and lastly farm and field produce, 9 prizes of a value of Rs. 31. Next year, when funds are more

flourishing, we hope to see the value of the prizes for the farm and field produce greatly raised. Out-station members of this Society would, we venture to think, take a great deal keener interest in the Society, were the correspondence alluded to below published either in full, or edited at length. But this again is a matter of finance we suppose.

Read Proceedings of last meeting. Approved. Read paper from General Baker revising the General Conditions and Prize List to show in May, circulated to Members of the Committee. Read letter from Hon. Mr. H. P. Hodgson, suggesting that prizes should be given for products grown in the Districts by ryots. First and second prizes for varieties of Potatoes and also for the best samples of Cooralie, Samai, field Onions and Garlic. Resolved that the prize list and conditions, as amended, with prizes amounting to Rs. 27, be adopted for the show. Resolved that the show be held on Saturday, the 1st May 1897. Read letter from B. Baulyah Naidoo, Esq., offering medal of silver for the best English Pears grown on the Hills, to be called the Havelock Medal, on His Excellency's permission being obtained. The Committee accepts with pleasure, Mr. Baulyah Naidoo obtaining H. E.'s permission for the use of his name. Read letter from L. W. Grey, Esq., of Pykara, asking for seed of the *Pithecolobium Polyccephalus* and stating that the *Pithecolobium Samai* promises to be a good Coffee shade tree, from his own experiments. Read letter from Collector of Nilgiris, 17th December, asking for information re "*Oryza Coarctata*," a wild rice growing in the Sunderbunds and elsewhere. On the request of the Reporter on Economic Products to the Government of India, Mrs. Batchelor forwarded specimens of some of the enemies of Agriculture on the Nilgiri Hills. The grub of the cock chafer, three stages of development, which she considers that it takes three seasons to perfect, before becoming the fly. Also specimens of iridescent small beetle, which does very much damage to vegetables and flowers. Specimens of a minute white wire worm that does much damage in bulbs, especially Lilies. Also specimen of soil impregnated with a white micelium or mildew. Members of the Society are invited to give any information in their power, as to the best means of getting rid of these pests. Members of the Society are informed that Mrs. Batchelor has obtained a larger supply of bulbs, principally Lilies, than she requires, and she will be glad to dispose of some of them at cost price. Members are informed that the Madras Agri-Horticultural Society's Annual Exhibition will be held on 27th February next. Medals and prizes will be given for Tea, Silk, Tussa Silk, the best collection of produce usually exported from Madras, Green Forage, Forest Products, Fibre plants and cleaned fibres, Economic plants, Timber and other useful trees, Medicinal plants, Dyes, Tanning materials, Mordants and the best collection of different varieties of Paddy. The first order for seeds will be despatched on 12th January, but the Hon. Secretary will obtain further supplies as requested.

(Signed) J. W. MINCHIN,
Honorary Secretary.

JADOO FOR PLANTATIONS.

MR. H. PILKINGTON, of Koppa, Kadur District, writes to the *Mail Mail* :—

"I have only recently seen Colonel Halford Thompson's letter which appeared in your issue of the 12th instant. As my name was mentioned therein in connection with Jadoo it will perhaps be better if I give a brief account of what I saw and heard of the fibre recently in Devonshire. My attention was first drawn to it by an article in the *Madras Mail*, and on enquiry in Exeter I found it extensively used by nurserymen and private gardeners. I then paid a visit to the well-known rose growers, Messrs. Veitch and Co. in Exeter, and their foreman showed me many plants growing and doing well in the 'fibre.' He told me that they found all 'soft wood' plants did particularly well in it; also orchids, ferns and crotches and it was most useful for germinating seed in, for which purpose the Jadoo that had been already used in pots answered admirably. I then, on the 11th November last, went to see Colonel Thompson and was taken round his conservatories, hot and orchid houses. East Cliff, Teignmouth, where he lives, no soil is now allowed. Whatever one sees, and there is much to be seen, is growing in Jadoo. I could not have chosen a worse time of year for my

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at the conservatory plants were looking splendid and there was a very fine show of chrysanthemums. There were numbers of very sturdy little apple and other fruit trees, growing in ordinary sized pots, then pruned back for the winter, but which had cropped heavily at autumn, as shown me by photographs and verified by Messrs. Leitch and other gardeners. What mostly concerns *Madras Mail* readers, though, is a coffee plant that I was shown. It had been obtained from the Regent's Park Botanical Gardens, in March, 1896, as then four inches high and was transplanted into a six inch pot of pure Jadoo. When I saw it, eight months later, it was in the same small pot, was 19 inches high, and had three pairs of primaries. It had a nice thick stem, and good open bark, and looked like a very good specimen of one year old nursery plant. Colonel Thompson turned it out of its pot for me to see and the very small quantity of Jadoo in which it was growing was full of nice healthy white roots—certainly better rooted than a basket plant grown in earth. I was also shown a small tea plant, then six inches high, which had been grown from seed germinated in Jadoo. It was a healthy looking little plant and had also made good root growth. I was then taken to the Jadoo factory. The 'fibre' found to answer best is 'peat moss litter.' This is boiled for 30 minutes in the fertilising solution and afterwards goes through a process of fermentation. Colonel Thompson gave me the ingredients of the 'solution,' and I can only say they are very simple and contain nothing 'forcing,' though they certainly seem to form an excellent plant food. Later I made further inquiries amongst some of the leading nurserymen in Torquay, and found that they, too, used and appreciated Jadoo. Generally, they told me that plants 'strike' root in it more quickly and readily, and flower earlier, and that as it retains moisture in a very marked way, it is most useful for plants in rooms. I found they generally use it as one part rotting mould to one part Jadoo.

I have not seen 'Toda's' letter; but to get at the cost of Jadoo for a supply basket nursery I examined what was in a six inch pot such as the coffee plant was growing in—and this, by weight, worked out to 1,820 such pots to the ton. Shortly after Colonel Thompson sent me a bushel of Jadoo, and I then tried again, judging as well as I could what would fill an ordinary three quarter size basket, and it worked out to about 1,700 such baskets to the ton. Mixing the ton to an equal bulk of earth would thus give 3,400 baskets, which putting Madras cost at £7, or Rs. 112, and carriage from Madras to Kadur Station at Rs. 11 per ton and carting from Kadur Station to Koppa at Rs. 13 per ton, gives a total of Rs. 136 per ton, say Rs. 140 at the nursery; or about 7½ pies per pot-basket for Jadoo. The cost of preparing an equal amount of jungle soil for mixture is not included in the above figures. But as a set-off to these figures there is the saving in value and carriage of the cattle manure usually applied to the pot-baskets and which would not be needed. I believe on the Nilgiris a smaller basket is used than is usual in Mysore, and if this were done, a considerable reduction in cost as well as in carriage would be at once effected.

Provided Jadoo makes coffee grow, as I believe it will do, both from what I saw and from what vinegrowers have written of it, there are three great points in its favour for use for 'supplies' (1) its richness, and the great probability that a smaller basket will answer, thus effecting a great saving in carriage from the nursery to the estate; (2) the firm, though penetratable, ball which it makes in a pot, rendering planting out easy even though baskets were rotten; (3) its retention of moisture, which would, I think, go a long way to help a 'supply' through its first hot weather as well as helping it forward with suitable plant food. After all, if Jadoo does bring supplies on, the initial cost would not be heavy compared to the annual outlay and disappointment of renewing them year by year. As to manuring old coffee with Jadoo, there is no doubt that the present price is prohibitive. But if a sufficient demand was created the Company might be induced to make it in this country at a very much lower rate. I may add that I am experimenting with Jadoo myself in a small way."

WEEDS AND WASH.

THE following thoughtful remarks appeared in the *Centatta Planter* from the pen of its Coorg correspondent. Though primarily referring to coffee, they are just as

applicable to tea. One of the most useful objects to which the U. P. A. could devote its funds—and it would not require more than a few hundreds—would be to institute an investigation into the yearly losses suffered by preventable "wash" or "waste of land."

The results would, we fancy, be astounding; and if the lessons taught were learnt and digested, the saving in the manure bill would be measured in lacs:—

The exceptionally heavy south-west monsoon through which we passed through last year has taught us a lesson from which it will be our own fault if we do not derive great profit. It is the practice here, and perhaps is in all the coffee districts of Southern India, to wage a perpetual war against weeds and keep places more or less clean; and the consequence is that the "wash," or "waste of ground" as Laborie more forcibly puts it, is something tremendous, and this year it has been especially so. One has only to look into a hollow or a depression in the course of a ravine, or say a tank or a dépôt pit, to form an idea of the harm that is done in a single year; for these are chock full of the most nourishing part of the soil—the "ghee" as one planter forcibly puts it. But no just estimate can be formed of the actual extent of the damage that is accomplished, as tons upon tons of valuable mould are carried away in the streams and completely lost sight of.

It is certain that this sort of thing cannot go on for long without places being as completely washed out as they were about Mercara and down the Ghats. The rainfall being less in the Bamboo than in the above mentioned districts, the destructive process would be perhaps slower, but none the less sure. It behoves all who are interested in the well being of the industry, therefore, to devise means to mitigate this loss of soil as far as possible. Writing with reference to the estates about Mercara and down the Ghats, Simmonds, in his excellent work "Tropical Agriculture," says:—"The slope of the land being steep, it is evident that unless cultivation is carried on with due precautions against the waste of the surface soil, by terracing, draining, or a judicious system of weeding, the trees will in a few years be deprived of the coolest and most nourishing portion of earth, and the land become sterile."

This was verified only too soon. Only a little draining was needed in a half-hearted fashion, and as for the system of weeding being judicious, why it only aided and abetted the waste of the soil, for it consisted of making shallow holes at intervals, scraping the weeds into them and covering them with a light covering of mould, which was washed away with the first downpour of rain, as also the inch or two of soil which the momati had loosened in scraping the weeds.

The solution of the whole difficulty lies in a judicious system of weeding. Some of our most experienced planters, Mr. G. L. Yonge I think among them, were of opinion that hand-weeding should never be done, but that the weeds should be simply hoed in. After 16 years of experience, I find myself in perfect agreement with the opinion that hand weeding should never be practised. One strong reason against it is that the roots should always be allowed to decay in the soil, as this insures a more equable diffusion of organic matter through the particles of soil.

I have found the following treatment of advantage. Grassknives the weeds in heavy wet weather, to prevent them growing into and choking the coffee and preventing the air and light having free access to it. This leaves the roots in the ground and does not kill the weeds, which go on growing and absorbing nitrates which would otherwise be washed into the subsoil and lost. This style of work has therefore the double advantage of binding the soil together and preventing the particles of soil being carried away mechanically by the rain, and also of checking loss in the drainage waters. The cut weeds I have buried in pits at intervals, covering them over with the soil taken out of the pits to prevent loss of nitrogen from decay which the covering of soil accomplishes.

This burying in pits is held by some to be harmful, as it excludes the air and gives rise to fermentation and souring of the soil. These people forget that fermentation and putrefaction take place in the open air, and that fungi seize on all dead plants and animals wherever they may be. They also forget that although these

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processes taking place in the near neighbourhood of animals is hurtful to them, they are not necessarily so to plants.

Two such weedings and burings would be necessary before the cessation of the heavy rains. After this I have given a fork digging, reversing every spadeful in the spot from which it is taken up, as much as it is possible to get coolies to do it. This turns the roots of the weeds uppermost, and they soon die and decay away. The next growth is usually white weed, and as the weather is by this time dry, they are easily disposed of. They might be lightly chopped and allowed to lie on and mulch the ground, or be buried out of sight.

THE SOURCE OF MALARIA.

ACCORDING to Dr. Bachmann, who writes on the subject in *The Journal of the American Medical Association*, the word 'malaria' is extremely ill-chosen, if the name is to give any clue to the facts instead of representing mere tradition. He insists that observation has clearly demonstrated the propagation of the disease not by 'malaria' (bad air) but by 'malaqua' (bad water); in other words, the malaria germ lives in moist ground and is taken largely into the system with drinking-water. This view harmonizes pretty well with the recent discoveries, described in these columns, regarding the connection between mosquitoes and malaria, for these make it probable that the germ when it leaves the insect finds its way into a human victim with food or drink. Says Dr. Bachmann:

'The germ, which is of soil origin, is strictly a protozoön, and reaches its highest development in low, moist ground with a favourable temperature. Surrounded by the proper soil conditions, this protozoön passes from one stage of life into another with considerable rapidity; so that in the present state of our experimental knowledge, it is impossible to identify it; nor is it probable that by culture we shall be able to produce the accepted Laveran germ outside of the human system.

'As a rule, the potable water from the malarial districts is derived from driven wells not over twenty-two feet deep, in soil with clay or some other impervious substrata, which water is generally cool and palatable, often sparklingly clear, but more frequently a little turbid. This water is filled with an incalculable number of these germs in all stages of development; and if used as a potable water, they naturally find their way into the system through the alimentary channel. This protozoön passes through so many forms or stages of life that in some stages it is light enough to float and be transported by the moist air of low grounds, but in this state it is comparatively harmless except under most extraordinary conditions; it is not until the surface-water is used that the real mischief begins, when, by reason of higher development, it has become much more virulent than that floating in the air. A very short period of incubation is sufficient to develop a severe case of malarial fever in the newcomer who uses the surface-water.

'From personal observation I know that the exclusive use of pure, deep-seated water affords entire immunity against malaria in sections of country where no white man dared live, using the surface-water. Nor must it be understood that the exclusive use of pure water simply fortifies and strengthens the system against the attack of the germ. The water is the primary cause of infection, which acts as the direct carrier of the germ into the system through the intestinal tract.'—*British North Borneo Herald*.

LETTERS TO THE EDITOR.

ENSILAGE: A CORRECTION.

"P. O." No. 2, p. 67.

Will "Agricola" kindly read for "Ham Ham" "Harri Harri" (running jungle grass) and for in "limes" in June.

PHELPS & CO. have often been asked why they don't open a branch in Darjeeling, but for that matter they have been pre- for years past to open at Bangalore, Coonoor, Madras, Rangoon, Lucknow, Cawnpore, Delhi, Mussoorie, and even in Naini but they prefer doing business from their Head Establishment, where the Managing Proprietor can have everything u his personal supervision, and travellers are employed to visit everywhere.

I'm sorry to trouble you and would not do so were it not that I'm afraid my letter as printed is quite unintelligible.

N. S. C. P.

AIR-TIGHT SILO.

SIR,—Your correspondent N. S. C. P. asks how to make "Silo pit air tight"? In closing Silo put on three feet earth tightly rammed, fill in all cracks as they appear. Pl mats on the top of ensilage. Cattle did well on the ensilage some were stall-fed, others fed in lines in the open.

Yours faithfully,
AGRICOLA.

BASIC SLAG.

SIR,—Has anyone used Basic slag as a manure? I see referred to in last P. O. The phosphoric in it is said to be in readily available condition. The considerable quantity of quick lime in it would, I should think, be valuable in shade coffee where the soil is well supplied with organic matter.

Yours faithfully,
SLAG.

PITHECOLOBIUM POLYCEPHALUM.

SIR,—I see you have again printed the extract from the Kew Gardens Bulletin about *Pithecolobium polycephalum*. I wrote Professor Thiselton Dyer of Kew, and have received a reply that seeds could probably be obtained through the British Vice Consul at Medellin. Perhaps you may be glad to have this information.

KARRADI HALLA, CHANNAJNAGAR, }
25th January 1897.

Faithfully yours,
EDWIN C. FOOT.

[Thanks for the information, which we hope to see availed of by some of our readers.—ED.]

PIGS AND TEOSINTE.

DEAR SIR,—In your journal, No. 2 of the 23rd instant, page 46, you say that pigs and porcupines leave the teosinte grain untouched. I had a $\frac{1}{4}$ bigah of land planted with this grain as an experimental measure, and when crop was half grown wild pigs attacked and destroyed a large portion of it. They showed a special liking for the stocks, leaving the leafy portions.

SAIFABAD, HYDERABAD, DECCAN, }
25th January 1897.

Yours faithfully,
MIRZA MEHDY KHAN.

[Our authority for the statement referred to has had some years experience in growing teosinte on the Hills. Perhaps fodder is scarce on the plains.—ED.]

INDIAN VERSUS LONDON COFFEE PRICES.

DEAR SIR,—In your issue of January 9th I see "A like Story" which I have no doubt is quite true, but I'll go one better.

I sold last year one small estate's whole crop in cherries picked half ripe, and very imperfectly dried when sold and delivered for Rs. 11-1 per bushel on the estate; had I sent to Calicut for curing and shipping, it would have turned probably 160 bushels to the ton; but counting it at only 150 bushels to the ton, I netted Rs. 1,659-6, or at the then rate of exchange the equivalent of about £97 on the estate!

I thus saved Rs. 37-8 transport, Rs. 45 coast curing, pilferage on the road, in Calicut and London, and I had my crop marketed at the end of January instead of waiting till June and July, and not lose further by exchange.

WYNADIEN.

WILL LADY-BIRDS LIVE UNDER SHADE?

SIR,—There is one point worth consideration by those who advocate the Lady-bird Experiment. The Lady-bird (Coccinella) is a sun-loving insect, and is seldom found in the shade.

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Touching a shipment of Indigenous Tea seed, an experienced Indian Planter writes us from Madura District dating 24th June 1896: "Just received the Tea seed; it has arrived in perfect condition, notwithstanding unnecessary delay in transit, and does you credit. Please book me for five maunds as early next May as possible."

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BINNY'S COFFEE WORKS,

BANGALORE

ve collected coleopteræ for many years and know of five
ferent species found in the coffee districts of Mysore. I have
ways found Lady-birds in open sunny places, on small bushes
creepers, and I doubt very much if they would remain on a
aded coffee estate; but if they did, I think their abode would
in the top branches of the shade trees. In hunting for
etles I have seldom found a Lady-bird on a coffee estate, but
ve at times seen many hundreds on fences in the open, which
d become covered with creepers. It is well known the Lady-
d feeds on aphides, and it would be unlikely to forsake these
blunt its "teeth" on
ADUR, 28th January 1897.

BLACK BUG.

SNAKES ON THE HILLS.

SIR,—In your issue of 9th January there is a most interest-
g record of the "Wynaad" by Mr. Adolphus Wright. In
e "Natural History" paragraph your correspondent talks of
bras, "length from $2\frac{1}{2}$ feet to 9 feet." Mr. Wright must
ve made a mistake, for no cobras have ever been known
approach anything like 9 feet!

One of the largest cobras is now in the British Museum and
asures 6 feet 4 inches—and I think the longest on record is
ly 6 feet 9 inches.

The Hamadryad (*Naia bungarus*), sometimes called Black or
ing Cobra, of course grows to over 14 feet. The "Mundell
awe" (Can.) your correspondent talks of is the Tic-prolonga
Russell's viper (*Vipera russelli*); though of sluggish habits is
e of the most deadly snakes of India. It grows to 4—5 feet.
is commonly supposed that these snakes are not found on
e high hills of South India, which is quite a mistaken idea.
short time ago a Russell's viper was shot on the top of Doda-
tta (8,000 ft.) after it had bitten two dogs. One died in less
an 5 minutes!

MMERGODE,
Mudgiri.

A. M. DALY.

THE COFFEE PROPAGANDA.

SIR,—While looking over some back numbers of *Planting
Opinion*, I came across the figures given by Mr. H. G. Parsons
"The Decrease of Consumption of Coffee in Great Britain"
his speech at the U. P. S. I. meeting of August 17, 1896, and
as very much struck with the decrease, which Mr. Parsons
tributes to two causes: 1stly, the cheapness of tea compared
th coffee; 2ndly, the ignorance of the public in not knowing
w to make a good cup of coffee. In the above-mentioned
eech he very truly asserted that "a good cup of coffee is pre-
rable to a good cup of tea; at the same time there could be
rdly anything worse than a bad cup of coffee."

Mr. Acworth, commenting on the above assertion at the time,
d he really thought that the decrease of consumption of
ffee in Great Britain was more due to the fact of the difficulty
making a good cup of coffee. And if the Planters wanted to
rease the consumption of coffee in Great Britain, they should
scribe a large fund among themselves and send an expert
nd, with a new coffee-pot, through the different villages in
gland, and teach them how to make coffee, just as the ener-
tic and enterprising tea-planters were doing in America at far
eater cost. He (Mr. Acworth) would do it in England, if
y sent him there for £150 a year.

It is recorded that after this speech of Mr. Acworth's there
s laughter. Was the idea looked upon as a mere jest? It
ems to me that the subject is deserving of graver considera-
n, and I am surprised that no abler pen than mine has not
this kept it before the readers of *Planting Opinion*. One
uld have thought so after the article "Coffee Planting in
razil," which appeared in *P. O.* of September 12th, 1896,

page 19, in which the writer says: "Brazilian coffee growers
are taking measures for an active propaganda, one plan being to
establish cafés and permanent exhibitions in Europe, in order
to demonstrate the deliciousness of Brazil coffee when properly
supplied and prepared." I dare say another plan of the active
propaganda will be to "take a new coffee-pot round to the
different villages of England" and teach the people how to
make a good cup of *Brazilian* coffee. Why should they not be
taught, sir, how to make a good cup of *Indian* coffee instead?
Perhaps some of your readers will let us know why.

"CUP OF COFFEE."

THE "IMPERIAL BUSHEL."

SIR,—As a subject of some importance to the planting
community in general, I feel sure that many will be willing to
give the matter I wish to bring before them their consideration,
and I hope that many will give their opinion and experience, and
suggest, if possible, a remedy to one of the many worries we are
subjected to. I write now from practical information and from
no ill will, but to protect ourselves from loss on despatch of coffee
to curers. There seems to me to be no standard measure of
parchment bushels for coffee measurement. There is a so-called
standard, but even then there are conflicting ideas as to the pro-
per capacity of an Imperial bushel, and I should like to know
for one what a Standard Imperial bushel really is? What are the
cubical contents, and being a Standard Imperial bushel, does it
guarantee its measurement being correct? I have a stamped
Imperial bushel *used only for despatch of crop* and bought pur-
posely from a curing firm in order to save the continual annoyance
from the cartmen who were invariably short in measurements.
I fully expected that at last I had secured myself against short
deliveries and paid some rupees twenty for my Imperial bushel,
but what was my annoyance to find that I was still short and a
request from the firm to send my bushel to them for comparison
with theirs. I did this and found that it was just a degree
smaller than theirs, and when I write and complain that I had
bought this Imperial bushel from their firm as a protection to
myself, I am informed that they are exceedingly sorry; but when I
purchased it from them their principal was at Home in England
on leave at the time, and so they had got it for me from another
curing firm. Now what is the good of buying a supposed
stamped Imperial bushel if they are not true in measurement, and
why do they not scientifically prove the measurement before
selling such. This is not all; the following year the same firm
might in the middle of crop provide themselves with a new
Imperial bushel measure and turn things upside down as the
despatch from the estate is woefully short. Contractors refuse
to measure with the new bushel and telegraph up for the estate
one. I send my bushel and crop turns out as despatched by mine
right, but some 3 or 4 short as measured by theirs. This is not,
I should say, helping the planter, but only making extra annoy-
ance between him and the contractors, and it is not business
surely: if they must have a new bushel, they ought to provide
their constituents with new ones also, and if there is to be such
a marked difference in Imperial bushels, it is time that one
standard be struck once for all. I have always found this with
crop despatches, and it is a well-known fact that the coffee is stolen
between the estate and the works in transit, but it would be some
satisfaction to both planter and curer and contractors also if a
Standard Imperial bushel of one standard in measurement were
established, as otherwise it is a case of annoyance all round. I
could not claim anything from my contractors for short delivery
after it turned out correct with my own bushel, and whether it
had been stolen by them is not and made up to my measurement
again by their many dodges en route who knows. The most as-
tonishing part of the business is however that the following year

has been remarked several times that no doubt PHELPS & CO. will raise their prices, now that they
have taken their Ladies' Department to 4, Russell Street, but it is a mistake.

I despatched with the same bushel to the same firm, but by a different contractor, and lo and behold there was not a bean short in a despatch of 168 bushels parchment coffee. My coffee as despatched was from 33 to 34 lbs. and on arrival was some 32½ lbs.

Yours, &c.,
"IMPERIAL BUSHEL."

PRACTICAL EXPERIENCE IN LEGUMINOUS MANURING.

DEAR SIR,—In P. O. of 15th August you published some experiments of mine in Leguminous manuring; and as "Wynaad Bean" in P. O., 9th January, asks that those who have tried the "Legume cult" should publish their experiences, I give you a few notes of what mine have been since August.

In my former letter I made mention of a 12-acre field manured in August and September 1895. The crop was small and I now consider the manuring was done too late, but at present time the trees are looking well and with a good spike. In June—July last year I applied "E. Lithosperma" cuttings to some other portions, and in three months the effect of the manuring was most marked, the trees having made a fine growth. They are continuing to look well and have an abundance of healthy spike. In October I manured another portion and the trees now show the effect of the manure by a nice growth of wood and leaves. The wood will of course not ripen to bear crop, and my experiments show the best time for applying Leguminous manures is not later than July. Their action is so quick that by applying them you get a wood for next year and help your tree through leaf disease.

I last year also manured with both Fish and Cattle manure, and before comparing results I might mention the cost to me of each manure. To cut and apply a good armful of "E. Lithosperma" cost 2 pies per tree. Fish applied at about 1 ton per acre cost 6 pies per tree. Cattle manure two baskets to a tree cost 1 anna per tree. Perhaps I did not manufacture my cattle manure as cheaply as it should have been done, and in calculating the cost I have taken cattle-keeper's pay and cost of applying. The fish was applied in May and the result is much the same as the "E. Lithosperma" manuring. The cattle manure was applied in June and so far the trees show very little appearance of having been manured and the benefit will come next year. The great point in "E. Lithosperma" manuring is its quick effect which proves that all the plant food constituents are in a soluble form and can immediately be taken hold of by the coffee. Those who don't know "E. Lithosperma" would be astonished at its quick growth, and when once established the amount of cutting it will stand. Albizias are not in it with "E. Lithosperma" for growth. The wood is extremely soft, almost pithy, and if instead of the loppings being buried they are left on the ground, they decay and are eaten up by whiteants in a few months, thus improving the soil and feeding the whiteants. While on this point, I believe a remedy for whiteants in tea would be to place a quick-growing Leguminous tree, keep it lopped so that its shade should not interfere with the tea flushing. The loppings would feed the whiteants and they would not then trouble about the tea and the nodules on the Leguminous tree would be supplying nitrogen to the tea. Whiteants don't attack tea in a new clearing, at least this is my experience, but only in clearings which have been opened some years and where the tree roots and trunks have all disappeared. The whiteants having nothing to eat, they attack the growing tea.

If confirmation is wanted that planters are on the right track in using Leguminous manures, I think what native cultivators do is a proof in that direction. In the paddy districts below

these hills the price for a bandy load of such Leguminous plant as "Tephrosea purpurea" (Cassia Auriculata) is Rs. 2 and the are carted miles. For cattle dung the price is 4 annas, but this is never carted except from the house to the field. The native has also found out that Leguminous manures are quick acting and prefers to apply them to his three months' paddy crop rather than to the six months' one.

LEGUME

COFFEE YIELDS AND EXAGGERATION.

DEAR SIR,—I suppose there is nothing more interesting to planter than statistics of yields per acre of coffee in different districts, and I think it would be a good thing if men from various localities on the Nilgiris could be induced to publish what coffee in their respective parts yield, taking the average say of the last 7 or 5 years.

One hears of such miraculous *expected* crops during blossoming time that it strikes one as funny. The *actual results* are not proclaimed with the same flourish of trumpets!! The good impression on the minds of some who hear of these expected fine yields (as each "blooming" season comes round) is a fine way of advertising our tote as I know of, as well as the district in which the tote is situate. Of course to publish the *actual results* in contrast to the expectation would be foolish for the advertiser so to do, inasmuch as a good deal of the guilt would vanish off the proverbial ginger bread. Again it would be nearer the truth to give the yield *per acre* and not the sum total in tons,—80 or 90 tons no doubt sounds a grand crop and 50 or 60 nothing out of the ordinary, but I contend that when (we will say) a 3, or 400 acre estate has given the former crop and 150 or 200 acre estate has given the latter, the bearing is decidedly better on the smaller property; consequently in valuing or purchasing, the yield per acre is the *safest* guide.

A good deal of romancing goes on during picking season. Tom meets Harry, says he has *got in* so much and there's much left on the trees. A look at the agent's receipt shows the difference!! As far as this went, it would not hurt any one, if it did not happen that Harry is a large proprietor who straight away writes to his Manager Dick and draws comparison between Tom and himself. To Harry, as a fellow proprietor I would say, "Verbum sat sapienti." It's only natural I suppose each man to stick up for his district, but that's no reason why any planter should *publicly* condemn another and tell arrant nonsense, for if put to the test he would be unable to verify his wild statements or prove that the yield of *his* district or tote exceeded the one he blackguarded. Now a good deal of this sort of thing has been going on lately, and it may be that district is condemned by a man, *because* he perhaps was once that district, and having made his own tote a failure, vents spleen on the locality.

The Colacumbie district has lately come in for its share of abuse, I hear, hence my taking up the cudgels in its defence. Any one with an unbiassed mind visiting these parts could not fail to be struck with the *solid* looking fields of A-1 coffee. Every district has its poor totes, but these even are conspicuous by their absence, bar one or two at the most. Taking the large properties, they are second to none in any part of the Hills; their yield ditto. Finer coffee than on "Sultana," "Mullay," "Manaar," "Tudor Valley," "Kodamund," "Welands," "Olands," "Colacumbay," "Craigmor," "Glencairn," "Mailoor" could not be seen. The smaller estates also and do proportionately as well as the above-mentioned. It has been proved to me that one of the above-named estates given an average of 4½ cwt. per acre for the past 5 years, an area, which I believe consists of under 200 bearing acres, yielded during season 1894-95, 83½ tons. 75,000 trees on one side

Ladies in the mofussil do not always realize that they can by corresponding with PHELPS & CO. at their Lac Branch at Russell Street, keep in touch with all that is newest and most fashionable in the world.

estate the same year gave 47 tons, or an average of $12\frac{1}{2}$ t. per acre. This is not so bad for this district, which one would not look at" or nearly ruined one, and bunkum and lib" to the same tune!

Yours faithfully,
"PROPRIETOR."

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma contains per ton:—

61-50	lbs.	Nitrogen.
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Tinnevelly.

COFFEE.

NATURE AND ARTIFICE.

INDIA AND BRAZIL.

WHAT everyone does must be right, for is it not the natured practice of the majority, that body of present day "routine" be, and a world without routine is unthinkable. Therefore, when we note that the practice of "topping" and close planting is universal in South India, as it was in Brazil, we assume it must be perfectly right. It would be interesting to learn in these latter days of scientific planting exactly how far close planting necessitates topping and *versâ*. This is merely by the way. What we wish to mark is the extraordinary differences that prevail in Brazil on these very points. There, close planting is unheard of, and topping equally unknown. The logical conclusion apparently seems to be that both systems are the best possible in their respective countries.

Is this really so? Now Brazil has admittedly a great deal to learn from us in the matter of picking and curing. It is not just possible, that we may have something, a mere thing of course, but just a wrinkle or two, to learn from Brazil? Let us see how the case stands. We do not intend to put cause and effect together, but a rough comparison between the two countries will be of interest. With all our careful cultivation, shading, pruning and manuring, we can show very indifferent results in the quantity of our crops. Leaf disease, like the poor, we have now always with us, and—except in the excellent cases obtained for our coffee—we can scarcely be said to have reached perfection.

Brazil planters have a splendid soil to begin with, no leaf disease, no topping and consequent pruning, and admittedly large crops. The prices, it is true, are very low, but it is at least a question whether the lowness of the rates may not be largely remedied by improved methods of curing.

First as to leaf disease. As a general rule it may be taken for granted that the more artificial the conditions under which plants are grown, the more likely are they to be attacked by disease. Is there not, perhaps, a certain connection between the presence of leaf disease and the

highly artificial conditions under which coffee is grown in India? We make the suggestion with great diffidence, and invite criticism thereon.

Supposing an attempt were made to imitate Brazil methods, the question arises, how about the differences in the soils of the respective countries?

Manuring would of course have to be resorted to, and obviously with fewer trees to the acre, each would receive a larger quantity of manure. Thus the four hundred plants would individually get three times as much as the twelve hundred that now occupy the same space. The expenses of pruning and handling would be almost altogether done away with, while the picking alone would, or might, entail a slight extra expense.

To show that our suggestions are not based altogether on mere plausible theory, may be seen from the following remarks of an experienced and successful planter:

"I intend to try a small field after the Brazilian style, and think it the rational plan, as coffee grows principally on the upper branches and suckers. I have noticed that stumped trees always crop well, and believe that cutting them down every sixth year or so would do well, if the tree were well nourished. I may cite the case of plants in isolated places yielding a large crop."

It may be of still more interest to note what has been already done in a somewhat similar direction.

In 1892 Mr. Phil. Beaver, of Kullakamby, Nilgiris, had occasion to take charge of an old and semi-abandoned estate, of which one field in particular had been given up as hopeless. His experiment, which turned out to be singularly successful, consisted in nothing more than to allow the old trees to spring up again naturally, in other words making "native coffee" out of useless old stumps. In describing the trial at our desire, Mr. Beaver writes:

"In 1892, on taking over the estate, I noticed that about five acres of coffee had been abandoned. In cutting my way through this field (for it had been all overgrown with brambles and brushwood), I noticed that the stems of the abandoned coffee were particularly large and full of vitality. It then struck me that it would be worth while giving the field a good clearing, cutting the stems down to six inches and burning over. This I did, and forked the land after the burning, just before the spring of 1892. About 3,000 stems responded to this treatment and sent up a wonderful growth of healthy suckers. It then occurred to me to let these suckers grow up naturally. So far, 27th January 1897, the experiment has been an unqualified success, and to-day the field is a 'sight for sore eyes.' The 3,000 stumps yielded in:

1893-94	fully	$1\frac{1}{2}$ tons.
1894-95	"	2 tons.
1895-96	"	$\frac{1}{2}$ ton.

For the coming year the suckers are perfectly full of spike, and as the suckers are now fully developed, I look for quite 3 tons.

These yields have been obtained without a pinch of manure. The only work done was a thorough trenching and regular weeding; no handlings, of course. After crop the dry wood was all broken off. The suckers do not die off to an alarming extent, as might be imagined, though after a heavy crop, many do, and the lower primaries die away too, of course, up to a certain height. But I find that new primaries take the place of any that die, and so the stem seems always to have its complement of bearing suckers.

I do not for a moment mean to assert that this field will do well for an indefinite period without manuring; no, I believe manure must be given to keep them up to the mark. I am also planting shade, for I find that wherever there are old "Nagas" or charcoal trees growing, the suckers under them are specially vigorous and stand crop better than those planted out in the open.

Again, I do not in the least wish to suggest that a whole estate could be treated in this fashion, for I am certain that it is only in sheltered hollows and in good soil that naturally grown trees from a good parent stem will do well.

Neither do I think that a fresh field of young coffee allowed to grow up naturally will pay, for each tree will grow into a long whippy specimen. But if an old estate has a decaying field that will not come round in spite of all work and attention, and the said field is in a sheltered aspect, then I say, treat it as I have done my abandoned field. I can guarantee the result will be a happy one. If the trees get in addition a good surface manuring after the forking, the results will be astonishing. I may again lay stress on my opinion, from experience, that shade grown over these suckers will make them last as long as any coffee treated in our usual style. I give these notes with pleasure and hope they may be of interest. It has just struck me that it may be asked if the picking of crop off these long suckers does not entail a lot of damage. I can say it does not. I provide a long crooked stick to my coolies; with these they just bend down the heads of the suckers; if they are held at the head they will not snap off and it's when the cooly begins hauling at a sucker near its connection with the parent stem that it parts company. This is all that has to be looked to in the picking. One more interesting fact. This particular field was abandoned on account of its cold locality. The leaves got "cockled" and the trees never recovered to blossom after a winter. But the suckers growing naturally seem to withstand the effects of cold, and certainly I have not seen a 'cockled' leaf on any of them."

We presume that Mr. Beaver, in his advice not to treat young coffee in this fashion owing to its growing up into long whippy trees, had in his mind the usual close planting in vogue. It is a well-known fact in forestry that the closer trees are planted, the cleaner will be their stems from branches, and if any branches do form, they will speedily die and fall off. Nowhere is this shown more clearly than in the blue-gum plantations on the Nilgiris, and the great contrast afforded between the thin, straight and clean stemmed rows of plantation trees, and the sturdy and branching specimens to be found in the open. We opine that much the same effect would be observed in coffee: the wider the planting, the less likely would the tree be to grow up thin and whippy. More information on this point would be of interest.

Fungus in Mexico.

It seems as if Mexico were not to escape the fate of most other districts in being plagued with fatal pests to the coffee tree. The fungoid disease *Stelbum flavidum*, Cooke, which we believe almost annihilated the coffee industry in Jamaica early in the century, is reported to have appeared in Mexico.

Erythrinalithosperma.

Mr. Nelson lately wrote us that his crop of seed of this grand tree was just beginning to ripen, and that as it would be over about, or before, the end of this month, anybody who wanted fresh seed should apply at once. The seed is a very hard one to get into condition and keep without spoiling. Talking of the difficulties of collecting it, Mr. Nelson mentions that parrots are keen competitors, two and sometimes three men being kept to shoot them.

The interest taken in the plant has been, we learn, extraordinary, and by no means confined to planters. The Bench, the Bar, the Church and Army, all are represented, enquiries coming from districts so far apart as Burmah, Assam and Kumaon.

The Ceylon name.

The reputation that Ceylon has achieved in the plantation world from "China to Peru" is unique, and is due in no small part to its happy geographical position. The skill and enterprise

of its planters is proverbial, but it does seem a little strange that the Brazil Dumont Coffee Company should choose, as they have done, a Ceylon man as manager for their estates. We do not wish to make unkind reflections, but if there is a country where coffee has been more utterly "wiped out" than in Ceylon, we have not yet heard of it. South India is still comparatively unknown at home, and the vastness of its planting industries is minimized by the way in which the various districts are scattered. There is no doubt we want a lot more advertisement than we get, and if we cannot get others to do it for us, we had better take a wrinkle from Ceylon and do it ourselves.

Sumatra.

From an interview with Mr. W. Turing Mackenzie, published in a Ceylon exchange, we note that the climate of Sumatra is a great deal healthier than that of Perak and Selangor, which is very feverish. The Sumatra labour is indentured from Java, and costs about Rs. 12 per man and Rs. 6 per woman per mensem, besides an advance of about Rs. 80 per head. Half of the advance is recovered and half is written off. All the coolies have a kind of passport, without which they are treated as vagrants and imprisoned. Sardang is the coffee district of the island. Some astonishingly large yields are reported, the produce being well over $\frac{1}{2}$ ton per acre for 4 year old coffee!

As to the argument against exhausting the trees, Mr. Mackenzie says boldly: "When nature offers you a good thing, take it." To-morrow "she may give a slap in the face." The present experience of British Central Africa planters teaches a very different lesson on this very point.

Market statistics.

From the interesting table of statistics published by Messrs. Rouse and Co., to be found in our Market Supplement, we note that as compared with 1895 the deliveries last year show a marked improvement, while the stock on the 1st January this year is slightly below that held on the corresponding date last year. Of the principal European entrepôts, Hamburg is easily first, showing more than double the amount of imports of any two of the other ports. London comes fifth on the list. The average price for middling Plantation Ceylon works out to 101s. 4d. for 1896 as against 100s. 10d. for 1895. It is now some eight years since the great rise in prices, and there seems every likelihood—barring the effects of such factors as we drew attention to in our last issue—of a similar range ruling for the next ten years at least. "Good channel Rio afloat" on the other hand shows a remarkable drop of about 23% in last year's prices, the average of 1896 being 58s. against 75s. 11d. in 1895. This again shows conclusively how very little we have to fear from the movements in the common kinds. It is worthy also of note that the Java crops are steadily decreasing, and it will take some many years yet for the Borneo and Straits coffee industry, most Liberian, to stay this decline appreciably.

Improved seed.

Referring to the article under the heading in our last issue, we have to thank friends for two samples of Coorg and Mysore seed, but should be glad to receive more from other districts.

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MANAGER, KALLAI WORKS.

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The Wynaad and the Planting

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" in South India, Arnold	...	7	8 0
" in Mysore, Elliot	...	7	8 0
" by Locke	...	12	8 0
" by Laborie, Planters' Manual	...	2	0 0
Cinchona Planters' Manual, Owen	...	4	0 0
" Cultivation, T. Christie	...	1	4 0
Cocoa, Cultivation in Ceylon	...	0	6 0
" Planting in Ceylon	...	0	8 0
" by Bidie	...	0	8 0
" by Hart, illustrated	...	4	12 0
Cardamoms, by T. C. Owen	...	1	0 0
Cotton in Ceylon, Hon. W. Mitchell	...	0	8 0
Chemical Analyses, Ceylon Manual, Cochrane	...	3	8 0
Crops, How Crops Grow, Johnson	...	10	0 0
" How Crops feed	...	10	0 0
Ceylon in the fifties and and eighties	...	1	8 0
Elements of Agriculture, Fream	...	3	8 0
Estate Buildings (Ceylon P. A. Prize Essay), illustrated	...	5	0 0
Forage Plants, and their economical conservation	...	0	12 0
Gardening in Ceylon, W. Cameron	...	1	8 0
India Rubber and Gutta Percha, All about	...	2	2 0
Liming, importance of	...	0	4 0
Planters' Note Book of Molesworth	...	3	8 0
Palmyra Palm	...	2	0 0
Plantains or Bananas	...	0	8 0
Pruning, Desbars' Tree	...	1	8 0
Manures, Harris' Talles on	...	6	12 0
" Lawes' Compensation of unexhausted	...	1	0 0
" Munro's Soils and	...	2	3 0
Ramie, all about Aloe and Ramie	...	1	5 0
Spices, all about	...	3	12 0
Tobacco, all about	...	3	8 0
Tobacco, by Locke	...	7	8 0
Tea by Bamber	...	4	0 0
" Industry in Ceylon in 1886	...	0	12 0
" Cult. and Manuf. by Hay	...	0	4 0
" Cult. in Ceylon	...	0	6 0
" at High Elevations in Ceylon	...	0	3 0
" Young T. Planters' Companion	...	4	8 0
" Nilgiri Tea Planter, McPherson	...	1	0 0
" Planting in India	...	0	12 0

P.S.—Any books required, not in the above list, we shall do our best to procure and forward by Value Payable Post only.

"PLANTING OPINION," COONOR.

"Englishman," August 1st, 1896

APPRECIATION OF AN INDIAN MIXTURE

Messrs. CHILD & CO.,

The Wholesale Tobacconists of Chowringhee, are in possession of an autograph letter from Mark Twain.

"Indian Daily News," August 1st, 1896.

Mark Twain left a substantial memento of his visit behind him in Calcutta in the shape of a letter addressed to Messrs. Child & Co., and an old Mississippi pilot knows what good tobacco is, even when he takes to literature.

MARK TWAIN.

Calcutta, February 8th, 1896.

MESSRS. CHILD & CO.

SIRS,—This is the brand I wanted. I have smoked your Honey Dew Mixed in another part of the world, and learned to prefer it.

Truly yours,

S. L. CLEMENS.

CHILD & CO.'S HONEY DEW MIXTURE

Is prepared from the four finest growths in the world, viz:—

Sun-dried Virginia (sweet and mellow), Old Kentucky (flavoured), Turkey Dubec (mild), Latakia (fragrant). All fine matured in bond, and judiciously blended.

It is a faultless Pipe Tobacco, being of medium strength

WITH DELICIOUS FLAVOUR.

THE FINEST THAT CAN BE MADE. NO EQUAL

In 1lb. air-tight tins, Rs. 2-8 per lb.

CHILD & CO.,

WHOLESALE AND RETAIL TOBACCONISTS,

MESS AND CLUB CONTRACTORS,

2-22, 2-23, CHOWRINGHEE ROAD, CALCUTTA

GENERAL PRICE LIST ON APPLICATION.

fore having them compared with Mr. Grey's seed. We have again heard from this gentleman, touching on the proportion of moisture in the prepared and unprepared samples described last fortnight. Mr. Hooper in a supplementary report says: "The moisture of the two samples of coffee was in the prepared sample 9.20 per cent. and on the original 10.73 per cent. Making allowance for this water calculating the ash on the absolutely dry coffee berry, the ash only reaches just 3 per cent. This is decidedly low and much below the average yield of ash, which is about 4 per cent. on dry coffee. You have certainly made a discovery." We hope Mr. Grey will not rest on his oars, but will pursue his investigations further. He has already succeeded in producing a bean containing 75 per cent. more ash than the ordinary bean. Let him go a step further, and give us a bean as superior in nitrogen as it is in ash, and lastly let us so treat the seed that it will yield a plant with a constitution capable of defying the worst attacks of leaf disease. This last point Mr. Hooper regards as hopeless, basing his objection on the fact of the disease being carried by means of spores. Yet we think the proposed inoculation would be very practical, and though nothing could prevent the lodging of the windblown spores, it is quite conceivable that the sap of the plant could be so doctored by previous treatment in the seed as to offer no suitable food for the development of the fungus.

But it is better to make haste slowly. Planters have a chance of experimenting with a very superior class of seed, and we hope they will not lose this opportunity. The astonishing neglect of planters in the selection of their seed is one of the marvels of present-day planting. The large extensions contemplated on the Annamalais will, we trust, be made with only the very best seed obtainable.

COFFEE CONSUMPTION: HOW TO INCREASE IT.

AMONG the "Letters to the Editor" this fortnight will be found an appeal from "Cup of Coffee" to his fellow planters to bestir themselves on this subject heading. That the small consumption of coffee in England is decreasing, is as patent as that the great consumption of tea is increasing. Both are used solely and wholly as beverages, and the question arises, why is tea drunk more than coffee? The statistics of the tea trade show beyond any possible doubt that a fall in cost (due to a drop either in price or duty, or both) markedly stimulates the demand. Taking Great Britain alone, there has taken place during the past dozen years an enormous increase in the consumption of tea. Preceding concurrently with this movement, both the duty and price of tea has fallen considerably. Knowing the high prices of coffee during the same period, can anyone doubt that they have not been a considerable factor in restraining consumption? In a very large measure, the question is one of cost. "The man in the street," who is usually the great element to be reckoned with, has not, we fancy, any violent predilection for tea in preference to coffee, or *vice versa*. He wants a hot, refreshing drink, and wants it at the lowest cost possible. He can get more pints of tea for a shilling, than he can of coffee, at present, and naturally takes to the tea. Equally, however, for the coffee planter, the question does

not end here. With Santos coffee in the shilling fifties, our friend of the pavement evidently does not get good value for his money. Why? There is the "middleman" between. This useful, but iniquitously minded individual, requires to be brought to his bearings in much the same manner tea planters have found so successful. "Coffee-pot touring" is all very well, but it wants more than this. Plantation coffee and grocer's coffee are two very different things. The latter is commonly sold ground in powder, ready for infusion, and in that process many curious things happen. First of all; adulteration of the bean itself often takes place. But even if pure, the roasting process is usually vilely done, and the true coffee flavour lost. Last and worst of all, does the shameless mixture, of often 75 per cent. of chicory take place, sold and drank in due course as coffee. And though this vile preparation were as cheap as tea, even "the man in the street" would, altogether apart from the flavour question, detect a notable lack in the exhilaration that should follow after drinking a cup of any decent tea or coffee. It will not be sufficient to supply the consumer with the pure unroasted coffee bean, for, unlike on the continent, practically no one in England roasts their own coffee. So the only thing left is for planters to undertake the roasting themselves by means of a suitable agency in London, and supply it in air-tight tins or packets, with a striking and distinctive trade mark or label. We must not forget the important point of ways and means. If the object is to induce the masses to drink coffee, can our high-priced Indian berry effect the desired result? If, again, American coffee is used for the purpose, is there not a danger of the public acquiring a taste for coffee that is not ours with a consequent fall in our prices? This, we fear, is but too likely, and we must resign the idea of converting the masses, and confine ourselves to the task of winning over the classes. This will simplify operations considerably, and the bigness of the undertaking is considerably reduced. Now as to funds. In a matter of this sort, payment in kind would be found most suitable in every way. It should not be at all difficult to induce one of the large provision dealers to take up the business, if a guarantee were given of so many hundred weight of coffee *free* for a term of years.

Another and more attractive method in some ways would be to start a co-operative roasting and packet factory, owned by planters. There would be initial cost of machinery and buildings, but this need not be very great to commence with. The raw material, the coffee bean itself, would also be supplied by planters, on credit, but not "free gratis" as in the other case. When the coffee was sold, the suppliers would be paid, and, probably, at exceedingly handsome rates.

There is no doubt many a planter will wonder what all the "bother" is about with the present excellent market, and not the remotest fears of over-production to frighten us with. Yet it is a very patent fact that the more we get the English public to appreciate our berry, the greater will be the competition to secure the limited quantities we can offer. The extension of his markets is by no means such a matter of life and death to the coffee planter as it is to the tea-planter, yet there are the two dangers of Brazilian competition and a rising exchange to consider. And even were

these dangers absent, it is a surely sound business to neglect nothing that will tend to materially increase our prosperity.

The subject is a most interesting one, and will bear a lot of discussion, which we trust "Cup of Coffee's" letter and our own discursive remarks will stimulate.

"BEES AND THE FERTILIZATION OF THE COFFEE BLOSSOM."

WITH reference to the notes on this subject by a "local scientist," which appears in your issue of the 9th instant, it would be interesting to know how, if a coffee estate be about the last place to find bees in large numbers, because besides the coffee tree, which is in flower for a very short period, there is very little for them to get honey from, how, I repeat, is it possible that the conditions would be so different near cliffs some eight miles distant that they would be found there? The absence of cliffs on an estate would make a difference; but it will be noted that this is not given as a reason for bees not being found on a coffee estate, but the paucity of flowers. If it is answered that the jungles surrounding the cliffs would provide the trees to supply the bees with honey, I may state that jungles are not infrequently found in the vicinity of coffee estates into which it would be just as easy for bees to make foraging incursions as for them to traverse a distance of eight miles from cliffs to visit a coffee estate in bloom. And although it may be true that the shade trees flower only once a year, yet as different species of trees are grown for shade, and they don't all surely blossom at the same time, it is possible that relays of blossom are provided sufficient with what can be got from the neighbouring jungles to supply the requirements of bees at any rate during particular seasons.

That there would appear to be sufficient inducement for bees to fix their quarters on a coffee estate, I may adduce an example to prove. In the Santikoppa District of North Coorg, there is an estate which derives its name from the fact that a large tree situated in it is covered with honeycombs twice a year. I never tried to count the combs on the tree, but I know its branches used to be black with them. The bees used to come some time before the coffee flowered and go away some time afterwards. I can't recall the exact dates, but I know they were always there during the coffee blossom time. They would return again after the monsoon, when one would fancy there was hardly anything for them. The natives said it was when the paddy flowered; but the trained quick sight of a bee can twig a blossom where we can detect nothing. The estate referred to was planted with the following shade trees:—*Nogas*, *Atti*, *Goni*, *Kuri Busri*, *Bili Busri*, *Pralwan*; and there were besides *Cinchona* and jungle trees. The difficulty is not that there is not sufficient inducement for bees to fix their diggings on a coffee estate, but providing them with suitable places to build in.

It is a fact that coffee blossom is fertilized to a large extent by various sorts of insects, especially moths. This may be noticed by any one going amongst the coffee at night when it is in bloom; so that we are not entirely dependent on bees for the fertilisation of the blossom. I agree with your correspondent that it is absurd to say that a bee will only fertilize 150 flowers a day. I couldn't trust myself to calculate the exact number of blossoms a bee could get over in a day, but I have watched a single bee get over a surprising lot in a very short time.

I cannot, however, agree with your correspondent when he says that it is immaterial whether the pollen drops on its own or another stigma; or that the coffee blossom is for the most

part self-fertilizing. Hear what expert authority has to say on the subject. Says Sir J. D. Hooker:—"It has also been proved that, as a rule, a pistil fertilized by the pollen of another flower or by that of the flower of another individual of its own kind produces more and larger seeds which grow into stronger plants than if it had been fertilized by the pollen of its own flower."

"These and many other observations tend to prove that the elaborate structures, colours, scents, sugary secretions, and other attractions of the corolla, stamens, and pistil, and their adjustments to one another and to the forms and habits of insects, are all intended to prevent flowers from being fertilized by their own pollen and to facilitate their being fertilized by pollen brought from other flowers, and also that the adjustment of the parts of the flower to the form and habits of the insect or bird, and of these to the flower, is so accurate, that it is in vain to speculate whether the plant is best adapted to feed the animal or the animal to fertilize the plant." This I think effectually disposes of your correspondent's contentions.

He says that the merest puff of wind would carry the pollen to an adjoining stigma. Is it not possible that there may be some provision by which the pollen grain is prevented from being detached in this way? Even if it were detached, its reaching a stigma would be the merest chance from the position of the latter. You see the pollen grain has to be deposited on the upper surface of the lobes of the stigma, and this would be precluded by many of the stigmas curving downwards. There would in this way be a large waste of pollen which a coffee tree could ill afford. We see this waste provided against in wind-fertilized plants by the tremendous lot of pollen they produce. The flowers of wind-fertilized plants are scentless and have no sugary secretions or bright attractive colours, and the pollen is like dust and produced in great profusion. It strikes me that if coffee blossom could be so easily fertilized by the wind the Natural Selection would have taken care that it had no useless appendages.

H. G. R.

BRAZIL PLANTING METHODS.

THE following very instructive and interesting interview with Mr. G. A. Talbot is taken from the *Ceylon Observer*. Mr. Talbot is a Ceylon planter who was, we understand, specially deputed by the Dumont Coffee Company to report on their property, and did his work to the thorough satisfaction of all concerned.

It will be noted that the yield is about 11 cwt. per acre, that the cost of production is about 13 shillings per acre with Italian labour at 3 shillings a day. A rough computation of profits, taking 50 shillings as the price per cwt, shows a net return of say £20 per acre. That the temperature is about 70° and the rainfall 70 inches. The cultivation and picking are bad, and Ceylon methods are to be tried. The coffee-bushes are unpruned, and grow to about 12 feet high. The Government is unstable, but landed property is unaffected by political disturbances.

Our readers will note that Mr. Talbot will remain in Ceylon for some months, and enquiries as to berths should be addressed him there. Probably if sent to the care of the Editor, *Ceylon Observer*, that gentleman would be good enough to forward them. The head offices of the Company are in London.

"The property of the Company consists of about 14,000 acres bearing. It is situated about 1,500 feet above the sea-level; but

must remember that that it is not the same as 1,500 feet in Ceylon, where here coffee land is only about 7 degrees north of the equator, and in Brazil, the Company's property is about 25 degrees to the south of the line. Consequently, the Brazilian climate is much more temperate, resembling that of Arabia. Yes, the estate is planted with *Arabica*. As regards the location of the estate, it is situated in São Paulo State, about 300 miles distant from the town of that name. A railway runs from São Paulo to within 13 miles of the Company's property; and between the terminus and the estate we have a railway of our own. This railway is of 2 feet gauge."

Can you give me any figures as to "the cost of haulage, working expenses, etc.?"

I cannot give you any precise figures, but it certainly answers very well and works economically. We also run passengers over the railway; the carriages are entered from the ends, and are fairly comfortable. The goods waggons are of the ordinary bogie type. I cannot work out the cost of transport per cwt., but I know that in the aggregate the cost is low as compared with the cost of similar transport in Ceylon. Santos is our market from which the coffee is shipped.

"What about the yield per acre?"

I think I am safe in saying that the average yield per acre is about 10 cwt. People in the district think that the labour supply is sufficient; but, according to Ceylon ideas, there are not enough of labourers. The labourers are principally Italians. They are not indentured. I believe you have to requisition the Brazilian Government for labourers and they assist in some way in bringing them over. I went to see some of the agents in Genoa on my way out, and they told me, if I went through this form, they could send me as many as I wanted. The bulk of the Italian labourers are peasants from the plains of Lombardy, with blue eyes and fair hair and many of them fine looking men and women. They do not pick so well as we did with Tamils in Ceylon.

"Can Europeans perform manual labour in the open without injury to health?"

"Oh yes! the property is just outside the tropics and the climate very healthy, the daily pay is something over three shillings per day."

Does not this high rate of pay largely increase the cost of production?"

No, because there is so little cultivation. The cost is about thirteen shillings per cwt. All the cultivation we have to do is hoeing, and weeding and the yield per acre being large, it makes the cost per cwt. much cheaper than it was in Ceylon. In Brazil we do none of the manuring, draining, handling and other odds and ends which were done by Ceylon planters.

Does the absence of pruning not cause the bushes to deteriorate?"

Pruning appears to be unnecessary, seeing the large yields we are getting. Draining can be dispensed with as the rainfall is not heavy. There was no rain gauge available, but I should say the rainfall was about 70 inches a year."

"What about the temperature?"

I fancy it would average about 70 degrees. Picking begins in January and goes on till about the end of August. There is a good deal of machinery on the estate, but the curing is not nearly so well done as it is here. However, we hope that by introducing Ceylon methods, we will be able to improve the quality very much, and to get a very much better price. In Ceylon, as most people know, we pick the coffee when it is ripe, pulp it, dry it, and then what they do is to peel it; whereas in Brazil they pulp only a very small proportion, and let it dry in the cherry and then hull it with a huller. The fault is that the husk being on the coffee so long takes off what is called the "colour" or quality and it gives an inferior flavour as a result of fermentation goes on. What we propose to do is first to get the coffee picked carefully done, and by introducing Ceylon methods and Ceylon machinery we hope to get a better sort of coffee. That cannot be done at once but it can be done by degrees. There will be a little difficulty in getting the men to adopt the new methods; and, probably, they will want higher wages for more careful plucking, and that way it will increase the cost of production, no doubt, but we think it will give us something like Ceylon coffee. As I have said, the people on the estate say we have all the labour we want and that we can get as many as we like, which is very satisfactory, as the intro-

duction of new methods will necessitate a larger labour force. In saying that much less cultivation was necessary in Brazil than in Ceylon, I forgot to mention that all the weeding is done with the hoe and not by hand picking, the work being done about five times a year. In Ceylon owing to the heavy rainfall, hoeing is impossible as the soil would be washed away. In Brazil no such difficulty presents itself and consequently the expense of weeding is very much less. The coffee bushes grow about 12 feet high, but they are not so lanky as those in Ceylon because of the more temperate climate of Brazil. The Italians have a comparatively easy time. When they are not required by the estate, they cultivate maize in the coffee fields for themselves. The maize they use for fattening pigs, and they contrive to make a good deal of money out of it. In some of the young coffee fields you can scarcely see the coffee for maize.

"Does it not smother the coffee and exhaust the soil?"

It is said not to injure it and the soil seems so rich as to be able to grow both. I however do not like it, and I hope we shall be able to stop, to some extent at least, maize being planted among the coffee.

"What about the cost of weeding?"

Weeding is done by contract, 80 milreis being paid for 1,000 trees, that is about £1 per acre."

"Have you ordered any machinery from Ceylon?"

At present there is no Ceylon machinery on the estate. The machinery is by Ledgerwood, a Glasgow firm, which competes with Messrs. Walker. Now that we are going to adopt Ceylon methods, we shall certainly use Walker's peelers and pulpers.

"What about power?"

"Steam is used, but at two or three points on the estate water power is available."

"Have you any black labour?"

"Not much. There are a few negroes about. A most extraordinary thing about that part of Brazil is that the slaves who were only emancipated some eight years ago are hardly to be seen anywhere. Where they have gone to I don't know. Most of them I fancy have drifted into the large towns and others have squatted on waste land."

"What about the future of the Company?"

"I am very hopeful of the future of the Company, and the best test of its continued prosperity is found in the fact that in the London market the shares are readily saleable."

"Does not the prosperity of the Company depend on the stability of the Government? What are your views on this subject?"

"I do not think the present Republic is a very stable Government; as a matter of fact, they were talking about a revolution when I was there. But a revolution in Brazil makes very little difference to property, especially if it is landed property, though it might be somewhat serious if the currency was disturbed. I consulted a man of some position—the manager of a large English Bank—on the subject, telling him that one of the things urged against subscribing to the Company was the unsettled state of the country, and he said—'Nonsense, landed property, house property, real property is perfectly sound and one need not fear anything.' I also asked a leading lawyer—a man of standing in his profession—and he said since the Brazilians had to pay the large indemnities to Italians they had been very careful to guard the rights of foreigners. Personally the Brazilians are a pleasant people to have dealings with."

Mr. T. L. Villiers of Yoxford, Dimbula, will take charge of the estates and he sails for England in the "Malta" on 11th Feb. No doubt Ceylon methods under his direction will have beneficial results. Mr. Villiers is to be congratulated on this important appointment.

Mr. Talbot went upcountry yesterday morning on a tour of inspection of the property of the Ceylon Tea Plantations Company. He remains in Ceylon about a month, and he will then leave for the Straits, visiting Selangor, and thence on to East Java, where he has properties, and afterwards to Batavia. He hopes to finish the trip in six weeks, and to leave Ceylon again for England about the end of March.

TEA.

TEA IN 1896.

THE tea season 1896-7 has now closed, and Indians have reached the record figure of 146,000,000 odd pounds, a

considerable increase on last and any preceding years. This increase on production is doubtless accounted for to some extent by increased acreage under tea in Travancore and South India generally, but mainly by expansion of the industry in the Dooars and Assam.

It is gratifying, however, to notice that the larger outturn has not been accompanied by the serious fall in prices.

The season, however, has not been an altogether satisfactory one. The Mincing Lane sales opened with a high range of prices; some people thought that another year like 1894 was to cheer planters' hearts, but later on in the season prices fell considerably, owing, we imagine, to forecasts of a very heavy outturn and inferior liquoring teas, and later the rise in the rupee made the prospect of a larger dividend earning season a very remote one. Towards the end of the season the market again rose for flavory and high grade teas, but buyers, as a rule, have had the advantage of all teas of 9d. and under. Provided, however, that the rupee remains in the neighbourhood of 1s. 2d., and is not artificially propped up by the Secretary of State in Council and the Government of India, the price of tea remains at a value which should give good dividends to well-equipped gardens, with large yields, and economically worked, but owners of small gardens, such as those that flourish on the Nilgiris, must insist on a higher class grade of tea being made, better plucked, manipulated and packed if they also expect to reap large returns from their enterprise. There is always a market, and a good one, for flavory high class produce, and an effort should be made to attack it with Nilgiri produce on equal terms with Darjeeling growths.

The chief feature of the past season has been the successful manner which the American and Canadian markets have been attacked by Mr. Blechynden, the accredited Agent of the Indian Tea Association, but money is now wanting for carrying on the campaign, and the United Planters' Association, now so many of the members are interested in tea, should take up the matter of South Indian planters subscribing to the fund. A levy of 4 as. per acre would doubtless willingly be paid, and would add considerably to the fund. The importance of such a step cannot escape the attention of owners, managers or assistants, for every million pounds of tea taken off the English market must make a considerable difference in the value of the remainder, and such a small impost would be quickly repaid by improved prices. Owners would directly benefit, and the billets of managers and assistants be more secure.

Australia again has become a considerable factor in the consumption of Indian grown tea; for a long time the bushmen would have none of it, but China imposed too much on her clients, sending such adulterated rubbish, that the good and economical qualities of Indian teas are now freely recognised by the Australians, and the consumption is going up by leaps and bounds, and will in the near future take 5/6,000,000 lb. off the market, an amount which will undoubtedly steadily increase.

The European market has not been neglected, and France, Germany, Spain and Portugal are all giving evidence of their appreciation of the cup that cheers.

It behoves producers, even at present prices, to first

improve the quality and cultivate higher, and at the same time take advantage of all labour-saving machinery, and reduce the cost of production per pound to the very lowest point consistent with efficiency.

On these hills especially, acres of land are cultivated carrying only a percentage of the plants they should be able to extend largely. Would it not be economy to supply up all this unremunerative land, or to abandon it? An improved jât of plant is required to be more generally planted up here, and then with our magnificent climate, combined with a high system of cultivation, our splendid communications, and cheap transit, and with improved methods of manufacture, London brokers would look for Nilgiri marks in the same way as they now do for Darjeeling, and the prosperity of Nilgiri tea planters would be assured.

With regard to manufacture there should be more interchange of ideas amongst planters. Samples should be exchanged with brokers' remarks, prices, &c., and emulation would soon arise, with a marked improvement in the quality turned out. Till something in this direction is done by the planters themselves, we can expect but little improvement. At the same time, with all the advantages we possess over other localities, it is disheartening to see Nilgiri teas, with notable exceptions, taking a back seat at all sales, and the lowest amongst all other hill districts.

The last reports to hand report a good market for flavory teas with a good infusion, and we trust during 1897 to see some Nilgiri marks take their proper place amongst the honor list in Brokers' reports.

Indian exports.

From the last Monthly Return of tea sailings of the Indian Tea Association, the following figures are of interest:—

TOTAL SAILINGS FROM	1896	1895	1894
	lbs.	lbs.	lbs.
1st April to 31st December.	128,128,411	119,705,655	111,575,444

The Australian market seems depressed, but the increase of shipments to America is most marked, being more than double those of the preceding year, and nearly five times those of 1894, which were only $\frac{1}{2}$ million pounds.

Japan enterprise.

We have already published the fact that Japan is girding up her loins for the struggle in maintaining her tea trade in America and elsewhere. It does not appear that they have as yet succeeded in obtaining the necessary funds, but it is noteworthy that they propose to maintain two representatives in India and China to keep the Japanese planters in thorough touch with the methods of their successful rivals. It seems rather absurd that they should go to China to learn lessons in tea making, but we do not fancy the idea at all of their investigations in India. Those little Japs are a great deal too quick and clever in imitation, and it would be just as well to crush them by extinguishing the American trade, before they have the chance they want.

Prunings and disease.

In the article in our last issue "Prunings and Disease Germs," we made a rather sweeping statement as to the necessity of collecting and destroying all tea-prunings before the leaf had time to drop off. In cases where tea is *absolutely*

in such diseases as black bug, red spider and so forth, the work of burning the prunings is scarcely needed. The necessity is certainly not apparent. But wherever any such disease is noted, however slight the attack may be, the precautions we advocate are wise ones, and can only be neglected at the peril of the planter. And the larger the garden which the disease appears, the greater the danger, and the greater difficulty in combating it when once firmly established.

Ceylon tea yield.

The official estimate for this year is 117½ million pounds, an increase of roughly 9 millions over last year's shipments, or 8½ per cent. Compared with the last few years the figures run as follows:—

		lbs.	Increase per cent.
Actual shipments 1891	...	65,274,421	...
" 1892	...	71,153,657	48
" 1893	...	84,406,064	4
" 1894	...	84,591,714	19
" 1895	...	97,939,871	nil
" 1896	...	108,141,412	13
Estimated 1897	...	117,250,000	10
			8.5

If, as the *Observer* fears, and the *Times* ridicules, the increase will be still greater the next few years, owing both to the planting up of poor reserve land and of manuring old tea, it will not take long before the Island outstrips the continent.

Artificial manures.

As we stated in our last issue, the consensus of opinion in Ceylon is that on old coffee lands, the yield of tea is quite doubled by the use of manures. It is of practical interest to note the proportion and amounts used. A favourite mixture being part of crushed bones to 3 of castor cake or fish, 5 ozs. of the mixture being applied to each tree. This means only about 6 cwt. per acre, and if, as in many cases, the yield rises from 300 to 600 lbs., it should be decidedly worth trying in South India, especially on old and steep, monsoon washed estates. It is held, too, that the effect of this artificial manuring lasts for two years, so that in reckoning out the cost of an experiment in this direction, this point should be noted. The only thing apparently that deters Ceylon planters from manuring as a matter of regular routine is the scarcity of labour. A very important point has been touched on, i.e., what is held to be the inevitable loss of yield due to repeated manuring on old estates. Personally, I think this evil could be easily avoided with a little thought. It is the old story of human wits against natural laws. Don't accept the usual results of the laws as final; obey the laws as your servants, don't let them be your masters.

The Mariawatte Estate.

Everyone almost has heard of this estate, with its prodigious yields. It is interesting to note that its best field (18 years) of 100 acres is still giving over its thousand pounds per acre. The manure, we understand, is brown sweepings; in plain words night soil. The following details are from the *Ceylon Observer*:—
"Mariawatte Estate Tea Crop return for 1896.—Total acreage 467 acres; total yield 410,436 lb., being 878 lb. per acre all round; of which the original 100 acre field has contributed 1,090 lb. per acre."

This 100-acre field is now 18 years old, and that it should still give nearly 13 maunds of made tea per acre is, we fancy, unique in the history of tea cultivation. From our "Handbook and Directory" we quote the past record of Mariawatte:—

"Mariawatte Estate original 104 acres planted 1879.—Yields: 1884 1,050 lb. per acre; 1885, over 1,133 lb. per acre; 1886, 1,018 lb. per acre; 1887, 1,115 lb. per acre. The acreage of young and old tea plucked over in 1887 was 307 acres and the total yield was 184,695 lb. or 600 lb. per acre, and when it is considered 147 acres of this was only 3-year old tea, the yield may certainly be called magnificent.—Mariawatte yield for 1889 over 424 acres was 625 lb. per acre; the original hundred acres gave in 1889 1,094 lb. per acre; in 1888 the yield from this field was 1,023 lb. per acre; in 1890 the crop was 321,167 lb. or 757 lb. per acre in bearing, the old 104 acres giving 140,144 lb. or 1,347 lb. acre—no manure for two years. In 1891, the yield was over 120,362 lb. or 1,114 lb. per acre; for 1892, it was 417,800 lb. for the estate—the old 100-acre field giving 1,114 lb. This was planted in 1879 and from 1884 has given over 1,000 lb. an acre, the highest return being 1,347 lb. in 1890. The average for nine years is 1,130 lb. For 1893, 1894 and 1895 we may say that the yield of the old Tea is still keeping up to over 1,100 lb. per acre and has every appearance of continuing its large yield, owing to the systematic application of bulky manure, say over 20 tons per acre, one-third of estate being so manured every year."

The Home Market.

The market for Indian tea opened on Monday, the 15th January, says the *Produce Markets Review*, when upwards of 30,000 packages were offered at public sales. Prices generally showed a firm tendency, especially as regards fine and finest grades. From the figures given below it will be noticed that the deliveries for the past month were on a very large scale, while the statistical position is particularly strong. This fact appears to have stimulated business, competition for desirable kinds showing an improvement, and all grades possessing quality marked a distinct advance on the easy rates established before Christmas. The finest kinds of both leaf and broken have shown a somewhat stronger tone, due to the generally small proportion offered. The deliveries in December were considerably in excess of those during the same time last year, showing an increase of 1,646,611 lb., the total being 11,584,879 lb. compared with 9,938,268 lb. in 1895; the imports, 18,526,383 lb., as against 17,305,803 lb., and the stock only being 1,506,125 lb. larger, the figures being 54,144,603 lb., against 52,638,478 lb. Taking the twelve months into consideration, the imports amounted to 125,412,214 lb., against 119,306,191 lb. in 1895, while the deliveries showed the large total of 124,651,855 lb. against 115,097,994 lb. The opening sales of Ceylon tea have been smaller than was anticipated, but prices do not at present show any signs of an upward movement. On the contrary, broken Pekoes generally may be quoted easier, and these kinds undoubtedly show better value than has been the case for some time past. Whole leaf teas show little, if any, change, and the commoner grades are entering freely into consumption at the very low range of prices recently established. It seems hardly possible, however, that the retail trade can be fully alive to the excellence of the value obtainable at from 5d. to 6½d., or a much larger business than is at present passing would be inevitable. The following are the figures of the past month compared with December last year:—The imports amounted to 7,387,000 lb., against 4,799,000 lb., and the deliveries were 6,990,000 lb. and 5,506,000 lb., while the stock stands at 18,354,000 lb., as compared with 13,812,000 lb.

DISTRICT ASSOCIATIONS.

NILGIRIS.

(From the "Madras Mail.")

OOTACAMUND, 22nd January.—The adjourned meeting of this Association took place on the 21st instant at the Masonic Hall, Ootacamund, when the following gentlemen attended, namely: Mr. Rhodes James, Mr. J. H. Tremenheere, Mr. J. W. Minchin, the Hon'ble Mr. H. P. Hodgson, Mr. W. L. Edmiston, Mr. L. W. Gray, Mr. G. Salmon, Mr. E. C. Marsh, Mr. E. G. Windle, Mr. J. H. Pascoe, Mr. J. W. Cherry, Captain N. G. Beadnell, Mr. G. Oakes, Mr. A. S. Cowdell, Mr. F. F. Turpin and one or two others.

On Mr. Minchin being called to the Chair, the Honorary Secretary opened the proceedings by briefly recapitulating the leading topics discussed and disposed of at the last General Meeting. Reference was made to the contribution by this Association to the funds of the U. P. A. S. I. and to the Sambur vs. Shade controversy. Mr. W. Mullaly's Resolution then recorded was re-read and the Hon'ble Mr. Hodgson's amendment, that was carried by a majority, was referred to. The proceedings of that Meeting were then confirmed by a show of hands. The second item on the Agenda was the reading of the correspondence between the U. P. A. S. I., Messrs. Binny and Co., and the Chamber of Commerce, regarding the exemption of chemical manures and of tea seed from import duty. There was a disinclination to co-operate with the Ceylon planters in this matter, owing to the irritation still felt at the attitude of indifference shown by the Ceylon men last year on the Tea Duty question. The Hon'ble Mr. Hodgson told the meeting that in communication with Mr. Acworth, he would move Government on both matters, as soon as it was in possession of the statistics on imported chemical manures, applied for from the U. P. A. S. I. and from other sources.

The Association next resolved to support the action of the U. P. A. S. I. as recorded in its circular letter announcing that Government had issued orders that enquiries be made as to the effect on Scale Bugs in Hawaii of the introduction of lady-birds, and the cost of procuring a consignment of lady birds; and as to whether Professor Koebele might be prevailed upon to visit this Presidency to investigate the pests.

The correspondence that passed directly between Mr. Sanderson, the Chancellor of the Exchequer, the Secretary of Customs, London, and the U. P. A. S. I. on the subject of an excise duty on coffee, and the treatment of coffee in the London Docks was then referred to, and the Association resolved that it could not do better than await the issue of the action of these authorities.

On the proposal of the Shevaroy Planters' Association to form an organisation for the protection of coffee from adulteration and the reference made on the subject by the U. P. A. S. I. for an expression of the views of this Association, it was resolved to leave the question for consideration to another and a later meeting, but on the Honorary Secretary urging that a postponement was undesirable, it was decided to inform the U. P. A. S. I. that independent action did not commend itself, and that what was to be done should be done by and through the U. P. A. S. I.

Another circular of the U. P. A. S. I. regarding the representation of South Indian planting interests on the London Chamber of Commerce was read and discussed. The opinion expressed was that as Mr. Mangles was willing to serve as the South Indian planters' representative, and he was in every way a suitable and strong man, his offer should be accepted. Regarding the Reserve fund of the U. P. A. S. I., it was resolved to approve of the proposal of the U. P. A. S. I. that it should be lodged preferentially in the Bank of Madras.

There was some discussion on reducing trade discounts in London on tea and coffee and a circular on the subject received from the U. P. A. S. I. read to the meeting. It was the opinion of most of the members present that the question was a fitting one to leave to the South Indian Planters' representative on the Chamber of Commerce to move in, and it was resolved to inform the U. P. A. S. I. accordingly and to support its action.

The maintenance of internal boundary stones on estates was a question that the Association had before it on a former occasion;

but it was not yet ripe for final decision. Mr. Tremenheere stated that the matter had been referred by him to the Board of Revenue but that they had not passed orders upon it. When such orders were received, he would lose no time in communicating the result to the Association.

He was also the principal speaker on the following item on the agenda regarding damage done by sambur to shade trees. The settled course of action adopted was for himself and the District Forest Officer to visit localities where damage was alleged to have been committed, and on finding the complaint valid to adduce Government for a temporary relaxation of the game protection rules. No orders had yet been received, he said, on any reference thus made, and action of the Association at present in that direction would accordingly be premature.

The claim of Mr. Hockin for remuneration for services rendered by him as a member of the Enquiry Commission was placed twelfth on the Agenda, and the correspondence that had passed between that gentleman and certain Associations and the U. P. A. S. I. was laid on the table and some of it read, with the result that the Association accepted the agreement entered into by the U. P. A. S. I. with Mr. Hockin, to reimburse him the salary he paid Mr. McInnes as his Superintendent during the months he was engaged on the Enquiry Commission. Some allusion was made in this connection to the practice of calling upon members to vote on subjects treated in voluminous correspondence without giving them the opportunity of reading the correspondence or of knowing what they were voting for or against; but no notice was taken of the protest.

The issue and service of warrants under Act XIII. of 1859 and the article of the *Madras Mail* of the 1st December was not considered. A statement was made by Mr. Tremenheere and thereupon the Association resolved that when a case of the kind came before the High Court on reference or revision, they should be informed and afforded the opportunity of engaging Counsel to represent planting interests.

The meeting expressed approval of the action taken by the U. P. A. S. I. and recorded, intimating that the Madras Government was addressing the Government of India with a view to the appointment of a full time medical officer to investigate the theory of transmission of malaria by means of the mosquito.

In reference to the call of the U. P. A. S. I. for a list of the members who desired to become subscribing members to the U. P. A. S. I., the Hon'ble Mr. Hodgson stated that the principle of permitting individuals to become members of the United Association irrespective of the position of such members in affiliated District institutions was already accepted by the U. P. A. S. I. and that only details remained to be worked out—those, therefore, who wished to join were invited to send in their names.

Mr. Windle asked for a reward for the toll-gate keeper who helped him to detect a case of coffee theft. A sum of Rs. 50 was sanctioned.

In conclusion Mr. Edmiston reported that it was impossible for him to continue to be Honorary Secretary any longer, and that he was reluctantly compelled to resign as the office interfered with his work. He was, however, glad to say that an able and willing successor had come forward in Mr. Windle, who was specially qualified for the post.

The meeting resolved to pass a vote of thanks to Mr. Edmiston for his past services and to accept Mr. Windle as the Association's Honorary Secretary for the future.

Mr. Edmiston gave a brief statement of the accounts for the past 4 years, and requested that the Association might arrange for the auditing of his accounts, to carry out which duty Messrs. Turpin and Cherry were nominated. The Hon'ble Mr. Hodgson proposed, and it was duly sanctioned, that Rs. 20 be allowed monthly to enable Mr. Windle to obtain the services of a writer to help him in keeping the accounts and copying papers.

TRAVANCORE.

THE Annual General Meeting of this Association was held at the Church Bungalow on Saturday, the 26th January, at 9-45 A.M., when there were present: Messrs. H. W. Baker, H. J. Blandford, L. Crawhall, J. Finch, R. H. Goldie, R. S. Imray, C. Lance, B. Lane, Rev. Father P. Segretain, R. D. Tollemache, A. E. Veale, the

B. Wilbraham and G. L. Acworth (Hon. Sec.); also as visitor, J. Knight.
Mr. Goldie, who was moved into the chair, in opening the meeting : "You are all aware, gentlemen, of the sad cause of my presence in the chair here to-day, and I will not say more than that Mr. Ashton has the fullest sympathy of every member of this Association. On the Agenda Paper I would draw attention to the subject of Government buildings, in particular that of the hospital, which at the present moment may be said not to exist, for the only accommodation there is an open and unroofed shed. I will not detain you further, but will move that the minutes of the last meeting be taken as read."

His having been carried, the Chairman called on the Hon. Sec. to read his Annual Report, which was as follows :—

CHAIRMAN AND GENTLEMEN,

In reviewing the year that has just passed, I think we may first of all congratulate the Association on its continued vigorous life. There is now not a single planter in the district whose name is not on our list, and the full attendance at our quarterly meetings together with the ample discussion of all topics more than testifies to the general interest in our welfare. In spite of a heavy drought followed by one of the worst monsoons on record, the year has been not unprosperous one, and, though there has been a general fall in prices for our produce, our crops have been fully up to the average, and the fall in prices has been general throughout India, by no means confined to this district alone. This universal decline is due to a deterioration in the quality of our produce, but to the fact, as stated by Messrs. Gow, Wilson and Stanton in a recent circular, that the production of British grown tea has now more than over-whelmed the home consumption. The position is a very grave one, and more than ever incumbent on us and on all growers of tea to combine together for the forcing open of new markets, and this being the case, it is most gratifying to be able to record that this district has done its full duty in supporting the

Indian American Tea Fund.—Every estate subscribed its full quota, and many individuals, not proprietors, contributed. From various American newspapers I have from time to time laid upon the table, you have been able to judge for yourselves what excellent work has been and is being done in that quarter of the globe by our able representative, Mr. Blechynden. The hearty thanks I testify to the good fruit borne of his efforts. The hearty thanks every tea producer are due to that gentleman for the skill, energy and energy he has displayed in carrying on the campaign. He will again be called upon in the current year for contributions to his Fund, and, being as it is a Life Insurance Fund for us, I am satisfied you will all respond as liberally as you have done heretofore. The *Labour Enquiry Commission* has been for us the great event of the year, and, the labour question being so serious a one for us indeed for all planters in Native States, it is earnestly to be hoped that the Committee's Report will soon be passed on from the Government of India to that of Fort St. George. You may rest assured that Mr. Rees in the one Council and our Planting Member the other will not cease to press for its production.

Roads and Communications have as usual been a subject of complaint throughout the year, but I would point out that our new Chief Engineer took over, as the *Western Star* expressed it, an "unpleasant Stable" and has had practically to re-organise the whole department. It is impossible for him to put everything in order at once, and I am convinced that time being given him, we shall in course see not only an immense improvement in the roads in our hills, but also in the various lines of communication throughout the state. You will be glad to know that I heard from the Dewan a short time since that the maintenance allowance for the main roads throughout our district has been increased. We have also to congratulate ourselves on the fact that, now that a subsidy has been granted for the Day Karnum and Kuduv Karnum roads, all roads in the district are partially maintained by Government.

Medical Fund.—Owing to the utterly inadequate arrangements of Government we have been compelled this year to form a fund amongst ourselves for the support of a medical man, and we have been fortunate enough to secure the services of Dr. Joseph. Hitherto, in spite of our representations, we have received no assistance from Government, which has looked coldly on our schemes, and

asserts that its rules will not admit of its aiding us except under certain conditions, which conditions are in themselves so utterly unsuited to a district of this kind as practically to amount to a refusal. We further approached the Government with a view to the establishment of a first-class hospital in our hills, expressing our readiness to bear a fair share of the cost, but were again met with a refusal. However I trust the decision of Government on this point is not final.

Health of the District.—In the past year the months March to May inclusive were exceedingly unhealthy, fever of a severe type prevailing amongst our coolies. I should not have noticed this but for the absurd and exaggerated reports that have appeared in the Press. It is utterly false, as stated by a correspondent to the *Madras Times*, that there were eight hundred deaths distributed amongst the various estates. To my certain knowledge there were not a third of that number, though I admit the death-rate throughout the district was higher than is usual.

Personally I attribute the extreme unhealthiness of the spring of the past year to the abnormal drought following on a very light monsoon, and to the consequent inadequate and impure water supply, and this I believe is the opinion of every reasonable person. To assign the cause to the Periyar Lake, as was done by the correspondent of the *Madras Times*, is too ridiculous, as a moment's reflection will show.

In the first place there has been for several years past a large body of water behind the dam, and we should long ago have felt its effects had they been at all adverse to the healthiness of the district.

Secondly, we know that the miasma is a low lying gas and the estates are all at a considerable height above the lake, whilst the nearest thereto is at least two miles distant as the crow flies.

Thirdly, at the very time when the fever was at its worst, the sea breeze was blowing strongly from West to East, that is from the estates towards the lakes, and would have been quite sufficient to prevent the advance of fever from that quarter.

Finally, and I think this clinches the argument, the two estates that suffered least were the two nearest the lake, the Mount and Arnakal. During the whole of the past season there was but little fever on either of these properties, and on the latter there was only one death from this cause.

Sales of Waste Lands have been wisely continued throughout the year, but much dissatisfaction had been expressed in more than one quarter at the present method of conducting them. It certainly seems hard that gentlemen should be at the expense of travelling nearly two hundred miles merely to find at their journey's end that the upset price as published by Government is not at all the price Government is prepared to accept, that without any warning a reserve of double the amount has been placed on the block applied for. Government of course has the right to reserve to itself the price at which it means to dispose of land, but it would certainly be well to publish this reserve some length of time prior to the auction, in order to deter the applicant from making an expensive and fruitless journey, should he consider the price excessive.

It may also be questioned whether the policy of the Government in this respect is a wise one, and whether it is not calculated to keep money out of the country. The planter's operations in Travancore have not hitherto proved so remunerative as to induce him to sink a large capital in the initial purchase of land. We look moreover chiefly to the small capitalist to open up the country, and such a man positively cannot expend a large sum in the mere acquisition of land, or if he does, he finds he is like the person who had not counted the cost of building a house, and he has to abandon his operations when only half completed. Such being the case, it would seem that by its present policy Government will in the long run be the loser, for Government should look for its profit not to the mere proceeds of the sale of land, but to the revenue to be derived therefrom in the future :—to the land cess, timber royalties, tobacco duties and the hundred and one indirect ways by which money flows into its coffers. From sheer exhaustion of material land sales must one day cease, but should the land so sold be well opened out and developed, the revenue therefrom will flow on in a continual stream.

Game Preservation Laws, passed by the local Legislative Council, were sent up to the proper quarter for approval. They were, however, owing to one or two clauses, returned for amendment,

but have since been again sent up, whether amended or not I do not know. I trust however the time is drawing near, when the scattered remnants of our game will be adequately protected.

United Planters' Association of South India.—To this it is unnecessary to allude, as its last proceedings have already been laid before you, and moreover the Report is now printed and in circulation.

Administration of the State of Travancore.—Mr. Chairman, you must have noticed that in the leading Madras newspaper the administration of Travancore has lately been severely attacked, and that quite recently a very clever article has appeared in its defence in the *Pioneer*. As my name appears in the latter paper, I trust you and the meeting will pardon my detaining you, whilst I say a few words on the subject. Gentlemen, silence does not always mean approval, and if in my various Annual Reports I have not touched on this topic before, it by no means follows that you or I are satisfied with the Government of the State. My silence has been chiefly due to my having considered the matter rather outside the province of an Association such as ours. But having been practically directly appealed to, I feel it incumbent on me to make a few remarks. Regarding the now famous examination paper I shall say nothing. I have not seen or heard what the questions under discussion were. That they were improper I have not a doubt, but it is absurd to attack a Government for the action of an unprincipled examiner, who had, I presume, full control of his Department. It is an incident that might have occurred in almost any State, and which the Government thereof would not only disapprove but deplore.

Against Mr. Shungra Soobyer, C.I.E., also I have not a word to say, and I consider the personal attacks levelled against him have been most unjustifiable. He is no worse and no better than his various predecessors in office, and the faults of his administration have not only been common to all Dewans within my recollection, with the exception perhaps of Mr. V. Ramiengar, but will continue to be so just so long as the Chief Minister is selected locally. Such gentlemen are bound down by the traditions of the State, and from these shackles they either cannot or dare not free themselves. But that the Administration of Travancore is not what it should be, I have no hesitation in saying. So long as a country is undeveloped and yet buries a large annual surplus in a napkin, I trust the writer to the *Pioneer* will pardon me, so long is a State badly governed. The case against Travancore briefly is that each successive Minister endeavours to rival the surplus revenue of his predecessor, whilst obvious methods of advancing the interest of the population are neglected. We have a subordinate Magistracy whom common report affirms to be notoriously corrupt, the subordinates in the police, forests and survey departments are so ill paid as to receive scarcely a living wage, which is naturally supplemented by illicit methods: something is done, little however as compared with what ought to be done, to open up new lines of communication throughout the country, whilst those already in existence are as a rule in a condition little less than scandalous. We have as yet no railway, and that now to be brought into the country is, we venture to say, not the correct line. Quilon cannot be called a Port. Alleppey is, and has always been, the Chief Port in the country. Were it otherwise, the Mercantile Firms would gravitate to Quilon, but this is not the case, as you all know.

That H. H. Government recognises the truth of this, I take to be proved by the fact, that the residence of the Commercial Agent is at Alleppey. That the Brahmin element in the State is far too powerful cannot, I think, be denied, whilst the shutting out of the lower castes from Government service is alone sufficient to stamp the Durbar as behind the times. The writer of the article in the *Pioneer* says, "The introduction of the railway will effect greater fusion in a decade than could the Government in a century." Under ordinary circumstances this would be true, but how is this happy fusion to be effected by a railway running for the greater part of its length through one of the most, if not the most, sparsely populated corner of the country. It will, as a matter of fact, touch the minutest fraction of the population, and as a civilizing influence I fail to see its value. To really develop the country the railway should run in the first instance from Palamcottah through Nagercoil to Trevandram, and should eventually be linked up *via* Quilon and Waroor with Cochin. Such a railway would run through the

whole length of the State, and would effect an enormous moral and material improvement in the people.

Mr. Chairman, I have only had sufficient time to touch the fringe of this subject, but I have said enough to disabuse the public of the idea that this Association is an unqualified admirer of the Travancore Government. It is true that in the State Reports the administration is generally praised by the Resident for the time being, but these reports are to my mind very much what our roads are a little prior to the advent of a Resident or a Governor. They are furnished up with a layer of loose soil to look their best and to carry the official chariot wheels to run smoothly.

Gentlemen, I have already laid the accounts on the table, but I have a sad task to accomplish before I conclude this Report. It is my most painful duty to refer to the great and irreparable loss the district has sustained in the death of Mrs. Dighton. I will not say more than that our late Chairman, the cause of whose absence we deplore, has our most cordial and hearty sympathy. The loss will be keenly felt by all, but in the lives of some of us it has left a gap that can never be filled.

GRANVILLE L. ACWORTH,
Honorary Secretary.

Central Travancore Planters' Association.

Mr. Imray, in moving the adoption of the report, which was seconded by the Hon. V. B. Wilbraham, said that it was so full and ample as to make it unnecessary for him to add a word to it, and that they were all heartily obliged to the Hon. Sec. *Carriemem. con.*

The officers having resigned, the Association proceeded to the election of those for the current year, when the ballot showed the following result:—

F. M. Parker	... (Chairman.)
G. L. Acworth	... (Hon. Secy.)
B. Laurie	} Committee.
R. H. Goldie	
R. S. Imray	

Mr. A. E. Veale kindly consented to undertake the duties in connection with the Medical Fund. The Hon. Sec. having pointed out the increasing expenses of the Association, it was

Resolved that the subscription for the current year be at the rate of 4 annas per acre exclusive of the Medical Fund. Read correspondence relative to the carriage of tea across the back water, and

Resolved that the charge in future shall not exceed one anna per chest.

Government Buildings.—There was considerable discussion on this subject, the Association going into Committee thereon. The present site was freely condemned not only as being unsuitable and inconvenient, but also as being eminently unhealthy. Special stress was laid on the absurdity of establishing a so-called hospital on a spot where fever of a bad type was prevalent through the whole of the hot weather. It was finally

Resolved that Government be approached with the object of inducing it to move the present Government buildings into a healthier and more central situation.

U. P. A. S. I.—The Hon. Sec. having pointed out that all District Associations had paid the call of 50% on last year's subscription it was

Resolved that this Association pay the extra 50% call in question.

Land Sales.—The Association having gone into Committee on this subject on the motion of Mr. Veale, it was

Resolved that the Association is in agreement with the Hon. Sec. in regard to his remarks on this subject in his Annual Report.

The following papers were laid on the table:—

A large quantity of American newspapers kindly furnished by Mr. Blechynden.

Proceedings of Wynad Planters' Association.

Do.	Coorg	do.
Do.	Lower Pulneys	do.
Do.	Shevaroyes	do.

A vote of thanks to the Chairman and Hon. Sec. terminated the meeting.

GRANVILLE L. ACWORTH,
Honorary Secretary.
Central Travancore Planters' Association.

ROUND THE BUNGALOW.

NOTES BY "A PLANTER'S WIFE."

reading case
or "Planting
pinion."
must of course depend upon the time the worker can devote to
Take a strip of art linen about 12 or 13 inches wide and some
inches long, and turn up each end so that it forms a pocket
ut $9\frac{1}{2}$ inches deep; sew up the sides and then slip in a piece of
at cardboard exactly to fit. Stitch up the mouths of the pockets,
the case up like a book, and fasten inside a piece of white silk
tic, or one of narrow ribbon, under which to slip the current
ber of the journal. If the case is required to hold more than a
gle issue of *Planting Opinion*, a second piece of elastic or
on can easily be sewn in.

other method.
Another way is to cut two pieces of card-
board, each piece the same size, say about $9\frac{1}{2}$ "
 $11\frac{1}{2}$ ", and cover them separately, allowing plenty of material
turning over the edges and securing it on the inside with
cotine or glue to the cardboard. Two thinner pieces of card
uld next be cut $\frac{1}{2}$ an inch smaller each way than the other card,
ould be covered with some thin material, as linen, silk or satin,
n fixed inside the embroidered covers to make the inside neat,
ce the covers under a heavy weight to flatten them when finished.
e covers must be joined by a narrow ribbon sewn to each so as to
m the back of the case and an elastic fixed in for holding the
rnal. The following would be a pretty and ornamental cover. We
l suppose pale turquoise linen is chosen, the design traced thereon
sisting of a band of conventional wild roses, running diagonally
oss from top left-hand corner to right-hand lower one, the title
ng embroidered in the right-hand angle above this wild-rose
d, and the monogram of the owner in the vacant corner below.
The roses should be worked in pale shades of pink silk and the
tres with yellow, the stems with brown; the title and monogram
also worked with the brown silk, either satin stitch or outline
g used. The embroidery should of course be worked before
king up the cover.

**home-made cor-
ner shelf.**
Corner shelves are valuable additions to any
room which it is desired to keep neat and tidy.
Newspapers, periodicals, etc., are continually
umulating in almost every household, and it is quite a relief to
ve a corner in which to tuck them comfortably away, but where
y will not be lost sight of.

The three large shelves are made from boards from 18" to 20"
width, the front should be slightly rounded. The front sup-
ts or standards are 3' in length and $1\frac{1}{2}$ " square. The back
ndard is the same size, only 10" longer, as at the top is
ed a small shelf or bracket which will require two small standards
long and 1" square which should be fixed into the top large shelf.
e shelves may, if desired, be covered with cloth or velvet, and a
tty fancy fringe or frill tacked round the edges.

This of course would be a great improvement. Another good
a is to drape it with a pretty curtain of art silk round the edge of
e top large shelf. The curtain would reach almost to the ground,
d prevent the books and papers from getting dusty. A still more
xpensive way of making these shelves, although not quite so
amental, would be either to simply stain them with oak, walnut,
ebony varnish stain; or to paint them with enamel and to tack a
rrow border of either stamped leather or cloth round the edges.

Carrot Fritters.
Boil a large carrot till tender; beat it to a
pulp, pass it through a sieve, and mix with it
gill of cream, two tablespoonfuls of breadcrumbs, and two well-
aten eggs. Fry the mixture, divided into the shape of fritters, in
t dripping, and serve with good brown gravy.

**pineapple Cardi-
nal.**
Peel a pineapple and cut it into thin slices.
Put these into a deep dish, cover them with
powdered sugar, and let stand for five or six
ours. Put the rind into a small saucepan with as much water as
ll cover it; bring it to a boil, skim it, and pour it over the fruit.
ld six ounces of loaf sugar and a bottle of hock. Cover and leave
in a cool place for three or four hours. When required, stir well,
d mix with it a bottle of Seltzer water.

SPEAKING OF LONG AGO.

TO-DAY, as I pen these lines, one picture from the long-vanished
past rises in my memory as clearly as though it hung on a wall
before my very eyes. It is of a boy about fourteen years old, propped
up in a great arm-chair with pillows and bed-clothes, and gazing
through a window. He is just convalescing after a long and danger-
ous illness, and is still thin, pale, and weak. The strong arms of his
loving father have taken him from the bed and placed him snugly
by the window in order that the may see his playmates at their
games in the snow; for the time is mid-winter. They wave their
hands to him and he waves his hand feebly to them. The scene is
from my own boyhood, forty years ago. What magic has conjured it
up now? Only a sentence from a letter.

This: "I was so weak that for years I had to be carried upstairs to
bed." A lady speaks thus of her girlhood. What a pitiable thing.
It is not what nature meant; but alas! too often what really happens
in this perverted world. Children should never suffer pain, for pain
is punishment. For whose offences, then—surely not their own—do
the little ones sicken and die by uncounted millions?

"From childhood," so runs the letter, "I was always delicate.
When fourteen years old I got a chill on the lungs which left me in
a weak state. Indeed, I was always tired and weary, and never knew
what it was to feel strong."

Now, tell me, if you can, what sadder reading one is apt to come
upon than this? Fancy a young girl being *always* tired, weary and
weak!—too weak to climb the stairs to her own bed! so feeble and
lifeless as to require to be carried over the house through which she
should have skipped and danced like a fawn. What had so crushed
her? Disease? What disease and how caused?

"I was very pale," continues the letter; "My feet were cold and
clammy, and hot sweats now and again burst over me. My appetite
was poor; and, after eating, I suffered such pain at the chest and
sides that it often amounted to agony; and the palpitation of the
heart was so bad that many times I got no sleep at night on account
of it."

And this at an age when the heart should beat quickly only with
feelings of joy and hope; and girlish forms in their beds should be as
quiet as recumbent statues.

"After a time," says the writer, "I could take liquid nourishment
only, my stomach being too weak to retain anything solid. Thus, I
gradually wasted away until I was nothing but skin and bone. I had
not even strength to walk across the floor; and all who saw me said
it was impossible that I should ever get well.

"From time to time I saw doctor after doctor, and twice went to
the Sherborne Hospital, but received no benefit from the treatment
there. At last the doctors said that both my chest and bowels were
ulcerated and that there was no hope of my recovery. I was now so
bad that I could take nothing but weak brandy and water—and that
only occasionally.

"In this hopeless condition I lingered on until March, 1890, when
I heard of Mother Seigel's Curative Syrup. Although I had given
up all hope of deriving any benefit from any medicine, I nevertheless
sent for a bottle of the Syrup, and after having taken it for a few
days I found myself a little better. This led me to continue using
it, and shortly I was able to take solid food, and the sickness gradu-
ally left me. Holding to this medicine—the only one that had ever
helped me—I grew stronger and stronger until I was in good health.
Without Mother Seigel's Curative Syrup I should never have re-
covered; and you must try to imagine how grateful I feel. I never
can put my thankfulness in words. Yours truly (Signed) (Mrs.) Mary
Jane Hilliar, Rampton, near Sherborne, Dorset, March 9th, 1893."

We rest at this. Here is a life history. How can we comment on
it adequately? What a pity that this woman should have so suffered!
What a satisfaction to know that she suffers no more! And yet—
the lost time, the lost happiness! Ah, yes! Mother Seigel had
reason enough to induce her to labour as she did to relieve her
sister women. Thank Heaven for her success.

Mrs. Hilliar's real disease was of the stomach—indigestion and
dyspepsia; inherited, probably, and made chronic by circumstances.
The remedy she finally used cured this, and so freed her from all the
symptoms and results. How kindly are the arms that carry us in our
weakness. How glorious not to need them!

MARKET SUPPLEMENT.

SATURDAY, FEBRUARY 6, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (January 8, 1897) says:—Public Sales were resumed on Tuesday last after an interval of nearly three weeks, and large supplies were brought forward, which met a good demand at about previous rates.

The first shipment of new crop East India was offered in auction on Wednesday, and realised firm prices.

New Granada and Columbian which formed the greater part of the catalogues attracted good competition at firm prices for the better grades, but the commoner sorts were occasionally 1/- lower.

Futures have been firm on reduced estimates of the growing Brazil crops and quotations showed an advance of 4/- since our last, but at the close prices have dropped back 9d. to 1/- from the best.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending January 13th, 1897, says:—The Bank rate remains at 4¹/₂%. Bombay Exchange closes at 1s 3¹/₂d. Brazil Exchange 8¹/₂d. Rupee paper 3¹/₂ 0/63. Silver 29¹/₂d per oz.

At auctions the finer qualities continue to be very keenly competed for, and are about 1s to 2s per cwt. dearer, whilst other kinds are about unchanged. Brazil markets are quiet but steady.

Daily receipts have averaged 8,857 bags in Rio, and 9,000 bags in Santos.

Futures have been quiet, and shew a decline of 3d to 1s, viz.:—Good average Santos in Havre, March delivery closes at fcs. 65.00, in Hamburg pf. 53¹/₂, and No. 7 low ordinary Rio in New York \$9.65.

To-day's London official quotations are:—

	Jan.	March	May	Sept.	Dec.
Rio ...	50/-	50/-	50/-	50/9	50/9
SANTOS ...	52/3	52/9	53/6	54/6	55/-

We quote:—

Ceylon, mid. to good mid. 104/@116/	Costa Rica, mid. to fine... 92/@107/
Do. small to low mid. 87/ „ 102/	Do. ord. to low mid. ... 76/ „ 90/
East India, mid. to good	Jamaica, good to fine ord. 71/ „ 80/
mid... 97/ „ 106/	Do. greenish to fine
Do. small to low mid. 87/ „ 94/	colory... 88/ „ 122/
Guatemala, mid. to fine... 92/ „ 105/	African ... 42/ „ 44/
Do. good ord. to low	Columbian, ordinary ... 65/ „ 70/
mid... 73/ „ 91/	Do. good ord. to
Salvador, good ord. foxy	low mid... 71/ „ 91/
greenish... 72/ „ 73/	Do. mid. to fine... 92/ „ 105/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
Rio ...	2,289,000	1,685,000	1,555,000
SANTOS ...	3,702,000	2,467,000	2,934,000
	5,991,000	4,152,000	4,489,000

Auctions:—

24 casks and tierces 23 barrels and bags Plantation	
Ceylon	... @ 98/ @ 121/
238 barrels Jamaica, chiefly sold	... „ 74/ „ 102/
508 bags Costa Rica, chiefly sold	... „ 89/ „ 103/6
69 bags Guatemala	... „ 76/6 „ 99/
223 bags Mexican	... „ 79/6 „ 97/
1,200 bags Columbian	... „ 65/6 „ 108/6
37 bags Peruvian bought in.	
121 bags Guayaquil bought in.	
103 half-bales Mocha bought in.	
99 half-bales Abyssinian bought in.	

On Quay Terms:—

2,326 bags Santos, part sold	... „ 56/ „ 60/6
Landed last week 413 tons. Deliveries 503 tons. Stock 8,425 tons.	
Do. last year 249 „ „ 466 „ „ 8,145 „	

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of January 15th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1st JUNE TO DATE.

	Indian.	Ceylon.	Java.
1896-1897...	1,036,956 packages.	698,659 packages.	24,872 packages.
1895-1896...	1,011,025 „	606,975 „	32,059 „
54,499 pkgs. INDIAN	Total 81,509 packages were offered in public auction this week.		
26,008 „ CEYLON			
1,007 „ JAVA			

Home Consumption for the past four years shows a gradual increase, specially noticeable in Indian and Ceylon Tea, while the trade in China continues to decline. The quantity of all Tea consumed in the United Kingdom in 1896 surpasses that ever previously taken in one year.

Quantity of Tea (in lbs.) on which Duty was paid at all Bonded Warehouses in the United Kingdom from 1st January to 31st December.

	1896. pctgs.	1895. pctgs.	1894. pctgs.	1893. pctgs.
Indian ...	122,941,098 54	116,343,316 53	116,965,653 55	108,143,602
Ceylon ...	80,294,475 35	74,023,810 33	71,570,078 33	64,218,061
China, etc.	24,549,936 11	31,433,014 14	25,805,313 12	35,735,722

Total lbs.	227,785,509	221,800,140	214,341,044	208,097,385
------------	-------------	-------------	-------------	-------------

The use of Indian and Ceylon Tea in foreign markets continues to increase whether sent direct from countries of production or re-exported from Great Britain.

Quantity of Tea (in lbs.) exported from Great Britain, from 1st January to 31st December exclusive of transhipment.

	1896.	1895.	1894.	1893.
Indian ...	4,306,162	3,924,551	3,490,490	3,321,324
Ceylon ...	8,242,438	7,093,441	5,123,862	4,065,709
China, etc...	20,732,240	19,245,430	23,055,341	26,113,695

Indian. The market has been steady for all descriptions, although the commonest grades a little weakness was here and there apparent towards the close of the week. This was chiefly due to the very large quantity of Indian Tea never previously offered in London in one lot. The following averages are worthy of note:—“Oaklands,” 2¹/₂“; “Tzum,” 1¹/₂“; “Eastern Assam Co. Balijan,” 1¹/₂“; “Sealkottee,” 1¹/₂“; “Debrooghur Comb,” 1¹/₂“.

Week's av. Tea sold on Garden Account, 1897, 40,471 pks., av. 1896, 33,468 pks., av. 8¹/₂d. 1895, 27,396 pks., av. 10d.

	1897.	1896.	1895.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam ...	22,505 p 10	17,862 p 9 ¹ / ₂	17,862 p 9 ¹ / ₂
Cachar and Sylhet ...	10,303 p 7 ¹ / ₂	8,462 p 7	8,462 p 7
Chota Nagpore ...	—	—	—
Darjeeling ...	1,572 p 11 ¹ / ₂	1,224 p 10 ¹ / ₂	1,224 p 10 ¹ / ₂
Dooars ...	4,233 p 7 ¹ / ₂	4,265 p 6 ¹ / ₂	4,265 p 6 ¹ / ₂
Kangra Valley, &c. ...	365 p 7 ¹ / ₂	149 p 7 ¹ / ₂	149 p 7 ¹ / ₂
Nilgerry ...	—	612 p 7	612 p 7
Terai ...	444 8	100 p 8	100 p 8
Travancore ...	801 p 7 ¹ / ₂	601 p 7 ¹ / ₂	601 p 7 ¹ / ₂

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.
	4 ¹ / ₂ d	4 ¹ / ₂ d	4 ¹ / ₂ d
DUST. (Fair ordinary, dark liquor)	4 ¹ / ₂ d	4 ¹ / ₂ d	4 ¹ / ₂ d
FANNINGS. (Red to brown, strong, rough liquor)	4 ¹ / ₂ d	4d	6d
BROKEN TEA. (Brownish to blackish, strong liquor)	6 ¹ / ₂ d	6d	7 ¹ / ₂ d
PEK. SOUG. (Blackish greyish, useful liquor)	6 ¹ / ₂ d	6 ¹ / ₂ d	8 ¹ / ₂ d
PEKOE. (Greyish to blackish, some tip, useful liquor)	8d	7 ¹ / ₂ d	9 ¹ / ₂ d
PEK. SOUG. (Blackish greyish, inferior liquor)	5d	5 ¹ / ₂ d	7d
PEKOE. (Blackish greyish, some tip, inferior liquor)	5 ¹ / ₂ d	5 ¹ / ₂ d	7 ¹ / ₂ d

Ceylon. The sale was a fairly heavy one and comprised 26,008 kages, against 25,869 last week. The market was distinctly steadier and all grades sold with good general competition, an advance being occasionally noticeable in good liquoring Teas and Teas for p...

SUPPLEMENT TO PLANTING OPINION.

um Broken Pekoes were somewhat less eagerly bid for. The following averages may be mentioned:—"Newera Eliya Co. Park," 1/2½; Associated T Co. Silver Kandy," 1/1. Average, for week 8d. against 8½d. for same period last year.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
SOUG. (Ordinary leaf; fair liquor) ...	6d	6½d	8d	6d
SOUG. (Ordinary leaf, little twist; fair liquor) ...	7d	7½d	9½d	7½d
SOUG. (Rather bold leaf; indifferent liquor) ...	4½d	5½d	7½d	5½d

PEKOE (Somewhat bold leaf; indifferent liquor)

1897. 1896. 1895. 1894.

... 5½d 5½d 7½d 6d

Java. Sales comprised 1,007 packages of direct import, and passed with a steady tone for all grades. Some Flowery Pekoe in boxes from "Nangoeng" sold at 2/4½ per lb. A small invoice from "Pancoembangan," grown from Assam seed, realised good prices; other Teas from Indian seed also selling well.

Bank Rate 4 per cent. Exchange London three months sight,—Calcutta 1/3½ Colombo 1/3½.

PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9d.) January 15, 1897.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souehong.		Broken and Souehong.		Fannings, Dust and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Wynad ...	124 p	8	...	...	44½c	7½	42½c	10½	28p	6½	7	5½	3½c	5½
ika ...	27 p	6½	3 p	1/	11 p	7½	...	...	13	5½	...	...	...	...
mond ...	444	8	...	...	...	...	...	...	...	...	...	...	...	...
idogra ...	184	9½	30	1/	33	9½	31	11½	90	7½	...	...	...	...
albarri ...	100	7	20	7½	20	6½	20	9½	40	5½	...	...	...	...
ar Goomiah ...	160	7½	30	9	30	7½	20	1/0½	80	5½ 6	...	...	...	...
ancore ...	801 p	7½	...	...	...	...	...	...	...	...	...	...	...	...
mudi ...	197½c	7	...	...	32½ c	6½	99½c	7½7½	46½c	5½	...	...	20½c	6½
kal ...	122 p	8½	14	8½	39	7½	43	9½	10	6	2	5½	14½c	7
encoil ...	81	7½	...	...	32	7½	21	11	9	6½	18	5½	1	6
rslie ...	56	6½	...	...	33	5½	15	8	6	5	...	...	2	6
rcauld ...	76 p	7	25	9½9½	49	5½	...	...	...	...	...	...	2½c	4½
d T Co ...	34	6½	...	...	34	6½	...	...	...	...	...	...	...	...
ithi ...	110½c	7	...	...	35½c	6½	37½c	9	32½c	5½	...	...	6½c	7½
ndotty ...	111 p	7½	20½c	9½	26	7½	13½c	9½	21	6½	20	6	11½c	5½
...	14 b	6½	...	...	14 b	6½	...	...	...	...	...	...	...	...

CINCHONA.

the auctions held on Jan. 12th, writes the *Chemist and Druggist*, 733, ages Ceylon, 211 East Indian, 234 Javan, and 74 packages W. African bark offered. The demand was fairly good, but several parcels were limited to the rates obtainable at the sales and bought in. The average unit was same as that of the preceding auctions, viz: ½d. per lb. The following prices realised:—Ceylon: common old *succirubra* and *officinalis* root, 1½d. to 2½d. per lb.; Renewed Hybrid stem chips, 1½d. per lb. East Indian: Common stem chips, 1½d.; Hybrid ditto, ¾d.; *Officinalis* stem chips and shavings, 2½d. per lb. West African: *Succirubra*, in fair, partly-broken quill and 2½d. to 2½d. per lb. Java: good *Ledgeriana* stem and branch chips, 2½d. per lb. At auction only 550 bales were sold; but a portion of the remainder changed hands afterwards.

Stock of cinchona in London on January 1 was composed as follows:—Indian, Ceylon, African, and Java barks, 7,989 bales; S. A. Calisaya, 1,000 bales; S. A. Crown and grey barks, 302 bales; S. A. red bark, 41 bales; *Agave* bark, 733 bales; Cupress, soft Colombian, N. Granadian, and Pitayo barks, 9,102 bales. Total, 21,586 bales, against 26,219 and 30,619 bales respectively at the beginning of 1896 and 1895. At the Amsterdam auctions to be held on January 21, 6,573 bales and 564 cases of Java cinchona, weighing together 652,947 kilos, will be offered for sale. The manufacturing bark represents an equivalent of 35,608 kilos. sulphate of quinine, or an average of 10 per cent.

Services from Java reported enormous shipments of cinchona bark for the month of December. The following figures indicate the total exports of the four years:—

	1896.	1895.	1894.	1893.
Number Ams. lbs. ...	890,000	634,000	531,000	391,000
Value year ...	10,979,000	8,827,000	8,917,000	7,342,000

The Amsterdam stock in first hands on January 1 consisted of 2,694 packages of *Prunella* bark, and 14,346 packages private bark. These figures included quantities to be auctioned on January 21.

CARDAMOMS.

Of late, rather higher prices have been paid by buyers of cardamoms. In some instances sellers have been inclined to meet the market somewhat freely and have been successful in obtaining somewhat increased prices on those ruling six weeks to a month ago. For EXTRA BOLD, a few cases have been cleared at 4s. 6d. and 4s. 7d. per lb.—BOLD descriptions are commanding 4s. 1d. to 4s. 7d. per lb.; MEDIUM, 4s. to 4s. 7d. per lb.; SMALL, 3s. 2d. to 3s. 10d. per lb.; and SPLIT, 3s. 4d. to 3s. 5d. per lb.; while for SEEDS, the closing quotations are 4s. 3d. to 4s. 6d. per lb. These figures should be interesting to some of our friends in Ceylon, and since the arrivals here go to show that this cardamom business is evidently a paying one for shippers, it is evident that we can commend our friends abroad to give the trade some attention.

MISCELLANEOUS.

CARDAMOMS.—The arrivals since our last report, writes the *Chemist and Druggist* on the 7th inst., have been as follows:—29 cases, per Sarbedon, and 190 packages per Bullionist, total 219, all from Colombo. At to-day's auctions the large quantity of 250 cases was offered. Most owners were very willing to meet the market, and under these conditions 153 boxes found buyers at an irregular decline, ranging from 8d. to 11d. per lb. on the better grades, 6d. to 7d. medium qualities, and about 5d. on ordinary kinds. Pickings sold in one instance at a decline of 1s. 3d. per lb., seed at a decline of 9d. to 10d., and wild cardamoms at from 1s. to 1s. 2d. per lb. below the last auction rates. Some days previous to the sales some business had been done in medium lean Malabar kind at 3s. per lb. The following were to-day's auction prices:—*Mangalore* character, medium, to bold round pale, 3s. 10d.; medium size, 3s. 6d.; small to medium, 3s.; very small pale, 2s. 7d.; small to bold mixed brown, 2s. 6d. per lb. *Ceylon-Mysore* and *Ceylon-Malabar*: fine bold round pale, 3s. 11d., medium to bold good pale, 3s. 9d.; small to medium ditto, 3s. 1d. to 3s. 4d.; medium long pale mixed, 2s. 8d. to 2s. 10d.; small fair yellowish, long and round mixed, 2s. 7d. to 2s. 9d.; very small pale, 2s. 3d. to 2s. 4d.; partly opened brownish mixed, 2s. 1d. to 2s. 6d.; ordinary brown pickings, 1s. 10d. Cardamom seeds realised from 3s. 8d. to 4s., and medium to fair wild cardamoms from 2s. 6d. to 2s. 8d. per lb. One lot, however, was held at 3s. 6d. per lb.

PLANTING OPINION.

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Estate Check Rolls	6	0	Chesterman's Metallic Tapes, best quality, 50 ft.,	
Pocket do.	1	0	Rs. 7-0 ; 100 ft....	10
Faber's Office Pencils, H. B. & B. (soft and medium),			Sill's Flexible Blotter (the best hand blotter known).	3
per doz.	0	8	Addison & Co.'s London-made Blue-black Ink, qts.	1
Faber's American Rubber Bands, per box, 10 as.,			Stephen's Blue-black (Copying or Writing), quarts...	2
14 as., Re. 1-4 &	4	8	Do. do.	1
Faber's Ink and Pencil Erasers	0	6	Do. Violet-black Copying	2
Penholders, per doz., 5 as. to	3	0	Do. do.	1
Pocket Memo. Books, 7 x 4½, limp cloth, leather			Field's Non-corrosive Black Ink	3
backs	1	0	Do. do. do.	1
Pocket Cash Books, do.	1	0	Field's Treble-strength Copying Ink half-pints...	1
Letter Clips ... 4 as., 6 as., 8 as., 12 as. &	1	0	McNiven and Cameron's, Mitchell's, G. Brandauer's,	
Superior White or Pink Blotting Papers, per quire,			Gillott's, Perry's, and Walter & Co.'s (Centric)	
Rs. 2-0 to	3	0	pens in small and gross boxes ...from 7 as. to	3

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PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, FEBRUARY 20, 1897.

[No. 4.

MANAGER'S NOTICE.

Numbers: A few odd back numbers of 1896 for sale at four annas each.

Back Number Wanted: One copy of No. 16, for which one rupee will be paid.

Offered: A few back numbers of 1896 at eight annas per copy.

N.B.—It is particularly requested that the names and addresses of the *senders* be legibly written on the covers of the papers despatched.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, at Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 27th March 1897.

Central Travancore.

PEERMAAD, 14th February.—*Weather.*—A few light showers have fallen, and show every signs of continuing, at which those who have new clearings to burn off will not be best pleased. *Crops.*—Tea should begin to flush better again now, especially if it continues. *General Health.*—Good. *Labour.*—Sufficient.

Coorg.

POLLIBETTA, 16th February.—*Weather.*—Fair with passing clouds; but threatening latterly, especially since the day before yesterday. There was a slight mizzle on the night of the 14th and this morning. It is hoped that the rain will keep off for a fortnight at the least, as there is still some pruning to be done and things are not quite ripe for the rain yet. *Crops.*—Some gleaning is still being done. Spike for next season coming nicely forward and prospects somewhat improved since pruning. *Plant-diseases.*—A sprinkling of diseased leaves still to be noticed, but matters much improved since pruning. Trees are wintering. *Labour.*—Sufficient, some being paid off shortly. *General Health.*—Some improvement, but fever and bowel complaints still prevalent.

S. E. Wynaad.

PUNDALUR, 16th February.—*Weather.*—Since my last report there is no change in the weather, but at intervals it is cloudy. On Sunday, the 14th instant, we had a few drizzles or say passing clouds. *Crops.*—Ragi 20 seers, cholum 20 seers, salt 7 seers, rice, 1st sort, 8 seers, and 2nd sort, 9 and 10 seers, per rupee. *Plant-diseases.*—Nil. *General Health.*—Good. *Labour.*—Fair. *Interesting Items.*—The vacant estates once known as Mr. Steedman's properties are being filled. Balcarres No. 1 is taken up by Mr. W. Ryan, Henrietta by Messrs. Sultan Mahomed Sahib & Co. of Ooty, Palmerston is applied for. There are plenty of lands which can be got from the Nellyalom Jemni, and the Karistan is a straightforward man, does his work quickly and honestly. Whoever wants land can apply direct.

Lower Pulneys.

AHTOOR, 15th February.—*Weather.*—Hot and dry until the afternoon when we had a sudden change. From then we have had light but steady rain to date, varying from 1 to 2 inches throughout the district. This will be good for the trees and help on the manure pitting which was becoming very difficult in the hard ground, but will bring out a small blossom, and I am much afraid turn any more we might have got into flush. We could very well have done without rain for another month. *Plant-diseases.*—Leaf-disease

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almost disappeared. A little green bug has been observed on some young coffee, but otherwise district is free from plant-diseases. *General Health*.—So far good. This rain will probably result in a few cases of fever. *Labour*.—Good. Locals a little short on account of grain harvest on the plains. Grain crops good generally on the E. and S. of the hills. *Interesting Items*.—Absolutely none. *Crops*.—Very nearly over, a little stripping still being pushed on with.

Nelliampathy.

16th February.—*Weather*.—Cloudy and rain every day since Sunday. Rain 1 inch. *Crops*.—(Rice) Grain 10 edingalies p. 1/. Gram 15 edingalies p. 1/. *Plant-diseases*.—Leaf still showing, but has gone off a bit on most places. *General Health*.—Lot of fever about, and this rain we have had will make it much worse. *Labour*.—Tamils almost all gone, but as many coolies as are wanted can be had, Moplas chiefly. *Interesting Items*.—None; district stale as ditch-water.

Nilgiris.

SHOLUR, 14th February.—No rain since last report. Drought now reckons from 23rd November 1896. Highest and lowest temperatures during fortnight between 6 A.M. and 6 P.M., 40° and 70° respectively. Pruned tea weaking out very freely and every prospect of early season. Labour very plentiful and health good. No diseases on tea this side, the signs of black bug having disappeared. Ragi 24 to 26 seers per rupee at Sholur village. P.S.—Since writing above, 34 cts. rain on Sunday, 14th instant.

COONOR, 18th February.—*Weather*.—Our winter broken up very suddenly by heavy showers on the 13th, 14th, 15th and 16th, totalling over 5½ inches. Will be simply grand for tea, but very bad for high elevation coffee. Even the lower elevation ones have not finished their pruning, but there an early blossom will be welcomed, as spike is forward. Last time we had this sort of weather was in 1891, when we had 11½ inches, almost, in 12 days. On tea the yield increased, as soon as the sun appeared, by 300%. For high elevation coffee, effect was very bad. *Crops*.—Coffee pruning not finished yet, and these showers will interfere sadly with work. The blossom that *does* come will be good for low elevations, whatever it may turn out for high. Leaf-disease passed off, leaving trees bare. Tea very healthy and will flush grandly when rains stop for good. Coffee crops turning out disappointing as expected, and outturn of parchment from cherry has proved generally very poor. "Feathering" or "nail pruning" will have to be studied on high-elevation gardens if the rain does not stop soon, as the spike will all go to leaf. *Wanted*. A substitute for *E. Lithosperma*, as this plant won't thrive at high elevations. Qualities required are quick growth, no thorns, soft wood, to stand any amount of cutting and to be a leguminous plant, i.e., bearing seed in pods like peas or beans. *General Health*.—Fair. *Labour*.—Generally speaking good. Curious thing this year is the wretched manner in which English fruits are setting their blossom. Some hold the peach blossom to be a species of warning as to the manner the coffee blossom will set. It might be taken by contraries, though. Last year we had a splendid peach crop: coffee crop wretched. This year peach crop will be a failure; wherefore, hope for a grand coffee year.

GENERAL NOTES AND ARTICLES.

A MODEL PLANTERS' ASSOCIATION.

For some months past there has been a growing desire amongst the planters of South India that their United Association, which has done such eminently useful work during the last few years in what may be termed the sphere of "planting politics," should turn its serious attention, as indeed it is now doing, to matters of more

immediate practical importance. With this feeling we in thorough accord and have, indeed, done what was in power to foster and strengthen it. A beginning has already been made, amongst other directions, in the matter of negotiating for the services of Professor Koebele, to investigate the pests that do such serious damage to our plantations. It has, we think, been proved beyond all reasonable doubt that Mr. Koebele's labours have practically saved the native coffee industry in the Sandwich Islands from annihilation. It is not unreasonable that South India may also hope to derive some benefit from similar work. Pursued to its logical conclusion the proposed Coffee Association will also, we trust, soon be an accomplished fact. There are many other directions in which scientific investigations might be carried on to the greatest possible practical benefit to the planting industry, and more than once we have sketched out lines on which they might be pursued. At the present day, agriculture almost all the world over, is receiving the most earnest attention capable scientists can give it, and it is more strange that the planting industries alone should be an exception.

It must not be thought for a moment that, in advocating special expert assistance, we look down upon what has already been done in carrying on investigations in the true scientific spirit by practical planters. The contrary is the case. That, in the midst of their busy rounds, with the greater portion of their time absorbed by purely routine work, they should have accomplished what they have, shows the possibilities of further success if the help of experts were available to pursue the work. Science alone will do little use, we mean that science which emanates from the laboratory full fledged, and untried by the only sure test that of practical trials. There must be a very close connection between science and practice, the laboratory and the field, if any real progress is to be expected. The motto of the Royal Agricultural Society of Great Britain—"Science with Practice," should be our own. After the preface, let us turn our attention to a country where the motto seems to have been adopted in a most thoroughly and strikingly successful manner.

We have already mentioned the invaluable assistance rendered by science to the coffee planters of the Sandwich Islands, but perhaps a more striking instance will be found in the unique state of prosperity that still attends the industry of those Islands in Hawaii. Everywhere else in the sugar colonies of the world, the staple industry is in a critical condition. Perhaps Natal and Queensland are only two exceptions, but even there things are by no means very flourishing. In the Mauritius, and especially the Indies, the crisis has already occurred, and sugar planters are at their wits' ends to know how to compete with the refined beet sugar in the London market. So urgent is the condition considered that a Commission is already at work in the West Indies, investigating their complaints, considering what can be done to relieve the distress in Hawaii, we learn that last year was a more than prosperous one, and that the majority of plantations largely increased their cultivation. To what causes this striking difference be ascribed? The soil and climate are equally favourable in both cases, and both again are free from similar disadvantages from an almost total lack

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Ourdes Estate. FOR SALE.—Four miles from Yercaud, Shevaroy Hills, on the slopes of the Shevaroyan, the Ourdes Estate, with 2 acres coffee and fruit trees. Total acreage 41 acres.

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Mounted Photos. FOR SALE.—One lot of Cabinet-sized Photographs, mounted, comprising the leading Authors, Actors, Actresses, Speakers, &c., of the day, all by W. and D. Downey, London. The lot consists of one hundred (100) photographs in splendid condition for Rs. 20. It is a bargain.

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Grevellea seed. New Grevellea seed available—cheap. Only a few lbs. to spare.

Apply "GREVELLEA,"
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The "Indian Agriculturist." FOR SALE.—"The Indian Agriculturist," a monthly of Indian Agriculture, Mineralogy and Statistics. 9 nicely bound vols. (1 to 9, 1876—1884) in perfect order, cost Rs. 14 each. Vol. now out of print. Open to offer.

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For Sale. A Battery by Casells of Paris, with extras, to be attached to a rifle or gun for shooting Tigers at night. Never been used. Cost 200 Rs. Price Rs. 150.

Graft apples and pears of the best kinds. For particulars apply to

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Attakhan Cadoo Estate. FOR SALE.—Attakhan Cadoo Estate, Coffee 100 acres, Jungle 87.

Apply L. A. WAUGH,
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Boys' Own Paper. Five Vols. "Boys' Own Paper" (1889-94), in good order. Price Rs. 20; offers considered.

Apply XNAW., C/o Editor.

Coffee Shade Tree.

Sun-dried Erythrina lithosperma contains per ton:—

61.50 lbs. Nitrogen
57.38 „ Potash
14.92 „ Lime
13.68 „ Phosphoric Acid.

Orders should be booked early for the present crop of seed from the parent trees of above analysis. Price Rs. 3 per 1,000.

This variety is the only thornless kind extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE,

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The undersigned undertakes to turn out old razors as good as new, i.e., with the perfection of a keen cutting edge guaranteed, for a small charge of eight annas and upwards, according to quality and temper of steel. The undersigned is importing the latest machine for this purpose.

The minimum charge will however be Re. 1 on each parcel of razors, postage extra. Do not allow any Native barber or knife grinder to touch your razors. They almost invariably spoil the temper, and although they may put on a keen edge, it will only last for one or two shaves.

A. R. ROSLING & CO.,
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u. c.

Ittithorai Coffee Estate.

FOR SALE.—The Ittithorai Coffee Estate above Kullaar Railway Station on the Nilgiri Railway. Elevation 3,000 feet; 68 acres land, of which 20 in Coffee. Planted 1890. Looking fine for next Crop. Price Rupees 10,000, of which one half can be secured by a Mortgage on the property.

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A small coffee property in Mysore, with a block of good jungle.

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FOR SALE.

PRICE RUPEES 30,000.

The Carolina Feliastowe Tea Estate.

Situated 1 mile from Coonoor, S. W. of the Bridge on the Bridle path to Ootacamund. Consisting of a large Bungalow of 13 Rooms (4 Bed, 4 Bath, 1 Dining, 1 Sitting, 1 Store, 1 Maistry, 1 Extra.) A detached Cottage, Cattle shed for 30 Cows, Kitchen and 2 Godowns, 7 Servants' Godowns, 1 Coach house and Stable. A smaller Bungalow of 5 Rooms, Cow house, etc. A Tea house 60 feet x 12 containing 1 little Giant Tea Roller, 1 Withering Rack of 13 Trays each 24 x 8 feet well and newly fitted up with Hessian Tatts complete. 1 2-H.P. Engine and Boiler to drive Roller, 1 Flue with Trays complete for Tea drying. A good Pulper in first rate order. 40 acres of Tea, Half 20 years old, Half 3 years old. 7 acres of Coffee, 2 full bearing, 5 young. 30 acres of Gums, 7 to 10 years old. 6 acres of Fruit, Manipuri Seed Tea trees, etc. 70 acres of Jungle and Scrub, 20 suitable for Coffee. Rest suitable for Tea. 153 Total acreage.

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To Small Capitalist.

FOR SALE Rs. 6,000.—A newly-built brick Mangalore Tiled Bungalow, in about 50 acres of land, suitable for fruit growing or coffee cultivation under shade. Rain-fall 80 inches. Only 3 miles from Taluk Headquarters, Govt. Dispensary and Post and Telegraph Office. A good road leading to bungalow only ½ mile off Government Road.

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The Rev. Frank R. Burrows, M.A., Trinity College, Oxford, receives Boys to prepare for Public Schools and Royal Navy. Ages 7 to 14. High and healthy situation, home comforts. Terms 50 to 70 guineas per annum. References kindly permitted to, and particulars to be had from, C. A. Martin, Esq., LL.D., Darjeeling, and Lt.-Col. G. C. Dobbs, I.S.C., Commissary-General, Bengal Command, Naini Tal.

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FOR SALE.—A level by Troughton and Simms, in case, with tripod and levelling staves.

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Apply "AJAX,"

Five.

C/o EDITOR, *Planting Opinion*.**Coffee Estate.**

FOR SALE.—A valuable Coffee Estate, in a good district, 100 acres in bearing, 25 young, 55 acres now being opened, 300 acres forest.

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Eucalyptus Boiler Disincrustator at 12 annas per gallon in 40 gallon barrels.

Eucalyptus Oil at 3/8 per 27 oz. bottle.

Apply T. BROWN,

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FOR SALE.—A good saddle and bridle by Parsons, St. Martin's Lane. Used only once—imported last year. Can be seen at Mr. Lexevich's Agency, Bangalore.

PERCY W. WOOLLEY,

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Nellacottah.

Coffee Land.

FOR SALE.—On easy terms, a block of 1,000 Acres of land in Wynaad, suitable for Tea.

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C/o Manager, *this Paper*.

Coffee Land.

FOR SALE. A BARGAIN.—A block of 210 acres of good Coffee Land in the Nilgiri District, planted with 20,000 4-year old coffee trees. No difficulty about labour. Grazing plentiful. Manure 1 a. per bushel delivered.

Apply to "BARGAIN,"

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C/o Editor, *P. O.***Good Land.**

FOR SALE.—Block of 1,000 acres, situated in the best district of Wynaad for the early showers; average annual rainfall 80 inches, with an average in January, February and March of over 5 inches.

Government Road from Coast to Mysore bisects the Property which is moreover bounded on the North and West by large rivers, each containing ample power throughout the year to drive Overshot Water Wheels.

The greater portion of the land faces North, North-East, and North-West, with a very easy lay, and the soil is admirably fitted for the growth of Arabica and Liberian Coffee, as well as of Tea. For further details apply to '303, C/o MANAGER, *Planting Opinion*.

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Two Iron water-wheels. A quantity of powdered sulphur. A cash chest.

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Coffee Seed extraordinary.

After two years' careful investigation I have been able (by a process which I shall not divulge for obvious reasons, divulge) to produce a coffee seed containing the very excellent percentage of 7 per cent. of ash in the parchment, and 3.71 without, as compared with 2.6 per cent. of ash with and without parchment of the ordinary seed. The analysis made by Mr. D. Hooper, of Ootacamund. Price Rupees Fifty bushel, cash with order.

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FOR SALE £500 STERLING.—An orchard in good order within Civil and Military Station Bangalore S. India, in a seven-acre block. Water available; contains a nice strongly built 8-roomed Cottage, with large outhouses and stable for 3 horses.

Estimated annual rental value £18. Fruit and other crop return per annum.

Further particulars, apply

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C/o "Planting Opinion," Coonoor.

WANTED.**NILGIRI DISTRICT PLANTERS' FAMINE RELIEF FUND.****Famine Fund.**

This fund has been opened as a branch of the fund started by the United Planters' Association of Southern India. Subscriptions (monthly) or donations are earnestly asked for from all residents in this district. Remittances should be sent to E. G. WINDLE, Hon. Secy., Nilgiri Planters' Association, Kotagiri.

Apl.

Bobbery Pack.

WANTED dogs for a bobbery pack. Ton essential.

Apply A. H. SHARP,

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Devikulam.

Shade Seeds.

WANTED Shade Seeds, fresh, of Silver Chalk, Albizzia Moluccana and E. Lithosperma.

Apply to

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"HAICH," C/o Editor, *"Planting Opinion"*

Nilgiri Tea Estate.

WANTED to lease for a term of years a tea estate, buy managing share, in a small tea estate in the Nilgiris.

Apply NILGIRI TEA,

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WANTED to purchase in Mysore a small estate under 100 acres, managing share of same.

Particulars to "P.,"

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Letter Press.

WANTED a second-hand screw letter press in good order. State price delivered at Rail Station to

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Wanted at once.

A trustworthy Writer for a small estate in Gudalur. Must understand Check Roll Accounts and write neatly.

Apply in own handwriting to

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Medical Practitioner.

WANTED.—By the South Travancore Company, Limited, a medical practitioner for Kalthurthy Valley Hospital and Dispensary. Applicants must have diploma of, or equal to, a Madras Hospital Assistant. Apply to MANAGER, S. T. T. COMPANY, LIMITED,

KALTHURTHY,

Tinnevely District.

There are so many cheap imitations of Ellwood's helmets in the market that it is a comfort to know that PHELPS & CO. keep Ellwood's only.

our, the plantation hands having to be imported over sea from India, Japan and China. Why should Hawaiian planters be able to succeed where the West Indian gives up in despair? We think the whole answer lies in the fact that in the West Indies scientific co-operation is almost unknown, while in Hawaii it appears to have reached its fullest development. The sugar planters of Hawaii have organised a most powerful association, a body that has been in existence for nearly fifteen years. The help it renders to the industry is enormous, while the need of such assistance is perhaps more urgent than in any other planting industry in existence. The processes of sugar extraction from the raw cane are complicated in the highest degree, and necessitate the employment of delicate scientific tests, aided by very elaborate machinery. It is out of the power of any single planter or even company to keep abreast of the latest improvements, but, banded together, the task has been accomplished with a full measure of success. The last annual report of the Association gives a clear idea of the lines on which it is worked, and the methods employed that have rendered Hawaii perhaps the premier sugar colony of the world.

Elsewhere, as we have pointed out, the cultivation of cane sugar has been steadily declining during the past few years. Ten years ago the export from Hawaii was only 108,000 tons, five years ago it had risen to 137,000 tons, and last year the export reached over 225,000 tons, an eloquent testimony to the prosperity of the industry. The scientific department, an unusually complete one, of the Association is shown by the report to have been hard at work, and special mention is made of the valuable services it rendered the planters. A start had also been made in a line we have repeatedly urged on our readers, *i.e.*, the carrying out of practical agricultural experiments under competent supervision; in other words, an experimental garden. There is no talk of the advisability of securing the services of a competent chemist for our tea industry. "Sugar chemists" have a place in almost every large sugar factory in Hawaii. There is the most thorough exchange of experiences among the sugar planters regarding the practical working of the latest machinery, so that any little improvement is eagerly adopted and comes into immediate general use. An important branch is that of the chemical and physical analysis of soils and manures, arranged through the agency of the Association. We note by the way that Prof. Koebele is no longer able to place his sole services at the disposal of the planters, though as etymologist to the country he will be able to render valuable help and advice on occasion. The income of the Association amounts to about 17,500 dollars, based by a uniform assessment on the sugar production of each estate. In the General Report are included special reports dealing in detail with every branch of the industry, from the field to the market. We note first the Report of the Honourable Committee, which is brief but hopeful, and expresses general satisfaction at the large increase in Japanese and Chinese coolies. According to the Government regulations, beginning is also to be made in introducing European labour. Then follows an elaborate report on machinery, which affords a great amount of most valuable technical instructions. Next we read of the work done by the Laboratory and Experiment station, which is apparently managed through, or with the assistance of, the local Government. This report is of absorbing interest, and we

purpose making lengthy extracts in a future issue, which cannot fail to be of much practical use to the more thoughtful of our readers. The key-note of the work of the Experimental Department was to the effect that, although the general laws of agricultural chemistry were available to everyone through the medium of text-books and primers, yet that local conditions so seriously affected the deductions to be drawn from these laws as to render local experiments of the utmost value and moment. Here, in a nutshell, lies the whole crux of the value of scientific knowledge and research. The practical rule-of-thumb planter sneers at scientific agriculture imported from Europe, and asserts, with a great deal of truth, that to argue from corn to coffee will land one into palpable absurdities. The "scientific planter" on the other hand laughs at the other's old-fashioned notions, and declares that the laws of science apply with like force from pole to pole. Both are partially right and as equally wrong. Local conditions are factors of extreme importance, and yet not so powerful as to wholly render neutral deductions drawn from different countries and modes of agriculture. To accurately determine just how far these conditions affect the basal laws of plant life and culture, is the proper work of experts. And that such work is admirably carried on is clearly shown by the admirable reports on Soil, Cultivation, Fertilization and Manufacture above alluded to.

Such, in brief, is the work done for its members by the Hawaiian Sugar Planters' Association, the results being shown in the unique prosperity of an industry which, outside of these Islands, is all but ruined. To similarly help and direct the coffee and tea planters of Southern India, through every branch of the industry from the clearing of the land to the sale of the prepared article, is the work before their United Association. It has entered on this work with no halting step; great success has already attended its efforts. And given the hearty and thorough support of each individual planter, which it so well deserves, it will not be long, we trust, ere it becomes a worthy rival to the "Model Planters' Association" which we have cited as an example to be followed.

Rhea.

That Rhea fibre is commencing to make its existence practically felt in England appears certain from the fact that a large advertisement appears in the *Textile Recorder* announcing that the Castleton Silk Mills at Rochdale are now offering yarns spun from this fibre, or from this fibre ingrained with silk and wool in a wide range of counts.

Cocoa.

Somehow the climate of Ceylon does not seem to agree with fruit-bearing trees at all. First coffee went out entirely, now there are rumours of serious disease in old cocoa. The prices of Ceylon cocoa for this year, however, says an exchange, are not unsatisfactory:—

	1896.	1895.	1894.
Good red	...55/ to 75/	55/ to 63/ .	60/ to 70/
	1893.	1892.	1891.
Do.	...80/ to 90/	107/ to 123/	103/ to 110/

Inoculation of insect pests.

A valued scientific correspondent from Assam writes us:—

I have been perusing U. S. Entomo. Bulletins, etc., and trying to

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obtain information as to the propagation of fungoid diseases on insect pests. Excepting the claims put forward as to its use in the case of the Chinch Bug [published some months ago in this paper.—Ed.], the idea does not work out so well in practice as its theoretical advocates state. It would seem that a fungoid disease has been found on a scale insect, namely the San Jose scale (*Aspidiotus perniciosus*). This and the matter in general is to receive the further attention of the U. S. Department this coming season.

Planting in Perak. Labour in this country is a good deal more expensive than in South India, but the land itself being cheaper and the soil climate magnificent for Liberian coffee, planting pays perhaps as well there as here. Outstanding advances are no longer the great bugbear they used to be, and are recovered in one or two years without much difficulty. Tamil coolies are being imported in increasing numbers, and they are thoroughly appreciated. Cocoanuts also do well, the yield per tree being exceptionally good.

The Agricultural Ledger.

Among the last batch received of this valuable series is a pamphlet on cinnamon leaves, a portion of which we may reproduce in another issue. There are also numbers on Jute, Rep (reclamation of salt-saturated lands), Atis (a drug used in fevers), and lastly a very interesting batch of correspondence on Bow String Hemp (*Sansevieria zeylanica*), as a secondary or catch-crop to tea-planters.

The cultivation of this hemp is extremely simple, and as it already commands a ready sale at home for cordage, etc., the market is assured. The plant is a native of the Wynaad and can therefore be easily procured by South Indian planters, who should be able to find it a valuable auxiliary. We intend publishing the pamphlet *in extenso* in our next issue.

Almanacs and Calendars.

It's a little late in the day to mention these, but better late than never. The most important perhaps is the Travancore Almanac for 1897, being a neatly printed and well indexed voluminous Directory on all matters of interest to residents of the "Model State." Among the many wall calendars for use and ornament, the one issued by Messrs. Addison & Co. ranks easily first for utility, while the Glendale Tea Estate, Coonoor, comes as much to the fore in the way of artistic beauty. Messrs. Child and Co., the Calcutta tobacconists, also send us a bright wall calendar, portraying two young ladies of striking complexions.

Last on the list comes Messrs. Davidson & Co.'s "Sirocco" office blotting pad and diary, which also serves the usual purpose of a trade list for their ingenious and varied tea machinery. A calendar is also inserted, and the *tout-ensemble* forms a handsome and very useful office blotter.

Prunings and disease.

Referring to the extract on "Finger and Toe in Turnips," in which we lately based some lengthy remarks, an old Ceylon planter, writing to one of the local journals, says:—

"After reading these, I think few men could continue that objectionable habit of poisoning the soil, by burying tea prunings: burn and manure with the ashes if you like; but failing this, leave them on the ground, the sun will very soon destroy any harmful matter [Will it? We very seriously doubt it.—Ed., P. O.], and the leaf covering left on the ground is beneficial in retaining moisture, and preventing wash.

Cacao Planters will learn in time to pay attention to the refuse of the pods after taking out the beans. [This would apply with equal or greater force to coffee pulp.—Ed.] It is a source of danger always; the only safe way to deal with it is to throw it all into a pit, and cover with a good dressing of quicklime, a supply of which should always be on hand during the crop season, but must be freshly burnt.

If it takes 5 or 6 years to destroy the harmful effects of refuse from the turnip shed, what must be the results of burying coffee husks, almost fresh, year after year in the same soil, and to the same tree;—quite sufficient to account for the serious bark disease which we hear so little, but which is doing incalculable harm to the Cacao Industry.

Lady-birds and their parasites.

In referring to Mr. H. O. Newport's interesting "Notes on Lady-birds and Coffee-Bug on the Low Pulneys," reprinted in the *Tropical Agriculturist* from a paper, Mr. E. E. Green of Eton, Pundaluoya, Ceylon, writes to the *Ceylon Observer*:—

Mr. Newport, however, reports that though the beetles are doing good work in a small way, they are not increasing in number rapidly as could be wished. This is only what might be expected from an indigenous insect which has no doubt its own natural enemies to keep it in check in its native country. But it has struck me that this same Indian beetle, if introduced into Ceylon, might have a freer hand and might prove a real service on the few coffee plantations remaining in Ceylon. This little experiment would, any rate, be inexpensive and easily carried out. I should be glad to correspond with Mr. Newport with a view to the interchange of natural enemies of insect pests between India and Ceylon. We on our side, might be able to supply the Indian planters with a species which—hampered by their own parasites—are unable to do appreciable service in this country, but which if sent to India—minus their enemies—might increase as the Australian beetles did in Hawaii.

This is, however, no easy matter to do, and we venture to doubt whether it would be wise experimenting in this direction without expert assistance.

District Associations.

Among the matters of special interest in the reports of proceedings of the various Planting Associations printed elsewhere, readers should carefully note the valuable instructions and maistry-cum-cooly agreements in the Wynaad report. Recent rulings seem to have placed it beyond question that the form of agreement made between maistry and cooly is usually wrongly drawn up, and greatly interferes, if it does not do away with altogether, the hold of the maistry on the cooly. In the North Travancore (Kanan Devanahillay) report, we notice a somewhat novel resolution on the subject of estate notes. The Consolidated Tea and Lands Company possess the major portion of the land in this district, and their estates are allowed each a vote, but the total number of votes is very wisely limited to only equal those held by estates not the property of the Company. Returning again to the Wynaad meeting, we confess ourselves sorely puzzled by the apparent scruples of the majority of planters towards giving the details of acreage, crop, labour, etc., desired by the U. P. A. Surely by using the term "inquisitorial," the Association does not imagine that the returns will be used by Government for purposes of increased taxation? A deplorable lack of ability this to understand the value of statistics.

A hint for Planters' Associations.

Some three or four years ago the Nilgiri Planters' Association formed a sub-committee to deal with

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 a manager, assistant, &c., the names and testimonials will at once be for-
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 entered free; others will be charged a fee of one rupee.

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Writer. Wanted a Writer for Field work only, must have
 a thorough knowledge of coffee, keep a rough roll,
 and have a good labour connection. None need apply unless they have
 the latter. Apply A. MORGAN, Kil Kotagiri, Nilgiris.

English Graduate. An English graduate and the son of a General
 Officer desires an engagement. Address
 No. TEN,
 C/ of this Journal.

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 Applications only need apply.
 Apply to A. H. SHARP, Esq.,
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 who understands field work and accounts. Must
 be young, active, and willing. Must speak and write English well.
 A labour connection is necessary. No one without these qualifications
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 M. A. T., C/o this paper.

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 tendent of a Coffee Estate. Five years' practical
 Experience in South Mysore. Excellent Testi-
 monials. Salary Rs. 150.
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 C/o Editor.

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 years' experience in Assam. Is willing to work 6 months without a salary
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methods of arresting the ravages of pests on tea-plantations. The outcome was a certain amount of very valuable practical information, which in not a few cases has resulted in the yearly saving of some hundreds of rupees. The Shevaroy Association also, at about the same time, made a beginning in somewhat the same direction, and the valuable practical papers on systems of drainage must have been of great use to the members. It would be a most excellent thing if permanent sub-committees were formed in each District Association in South India, whose object would be to collect and prepare all available information in their district, bearing on the best methods in vogue for the different practical estate-works. It would be of use if the subjects to be taken up were chosen by the U. P. A. Committee, so that a uniform series of investigations might proceed simultaneously in the various districts. This would render possible an extremely interesting means of comparison between the different districts. It is obvious that certain broad local conditions could be also given in each case. Take for instance the subject of chemical manuring, which perhaps ranks as first in importance of any branch of planting. A porous soil, with a moderate rainfall, must obviously receive different treatment in this matter to that adopted in a heavy clayey soil and excessive rainfall.

Partial analysis.

We trust that when once the question of Funds is satisfactorily settled, the U. P. A. will take immediate steps to induce a competent agricultural chemist to take up the work of analysing soils and manures for its members. The prices charged by resident firms in South India are prohibitive, mainly due to the inability to grasp the needs of planters. Full and complete analysis is without doubt a most elaborate, and necessarily costly, investigation. But is it necessary that *complete* analysis should always be furnished? We throw not. Doubtless from a purely scientific standpoint it were highly desirable that analyses should invariably be as complete as possible. But practical agriculture is, yet, content with very little. A planter, in wishing to have a sample of manure analysed, as a very general rule only wants to know the proportions of the four important elements: nitrogen, phosphoric acid, potash and lime. The soluble silica, and insoluble silica, chloride of sodium, salt, sulphuric acid, carbonic acid, magnesia: what does he profit from knowing the exact number of decimals that go to each of these?

It would be highly desirable therefore that, either that the resident firms should fall in with the views of their constituents and charge, say, half rates for such partial analysis as indicated, or that the U. P. A. should import a special chemist for this and similar purposes. A planter writes that he enquired the cost of ascertaining simply the soluble ash and moisture of a certain product, and was told that he would be charged Rs. 20 per each sample! We have it on very competent authority that Rs. 5 would be more than a fair price to be charged for such work.

Mr. Chas. Ledger.

Some time ago we published an account of the unsuccessful efforts of Mr. Ledger to obtain a pension or additional gratuity from the Dutch Government, on account of the splendid

services he rendered them in procuring cinchona seed of the variety now named after him. We now are pleased to note that the efforts of his friends, and especially those of the *Chemist and Druggist*, have resulted in a pension of £100 per annum being allowed him. We extract the following from our contemporary:—

"The influence of the Press has been illustrated in a somewhat remarkable manner, in the case of our own journal, by the grant of an annual pension of £100 to Mr. Charles Ledger by the Government of the Netherlands. Thirty-one years ago Mr. Ledger, with much trouble, and at great personal risk, collected in Bolivia and brought Home to Europe a supply of the cinchona-seed called after him—*Ledgeriana*. The Dutch Government bought the seed outright for about £150. From this seed the bulk of the Java cinchona-plantations, which have yielded millions of profit, was raised. Meanwhile Ledger disappeared. He was supposed to have died years ago in South America, when a letter was received by us stating that he survived, and lived in a back block of New South Wales in great poverty. He had come across a stray copy of the *Chemist and Druggist* containing a statement about coca, and wrote to us to criticise that statement. It happened that two other cinchona pioneers, an Englishman and a German, had just died, and we asked Mr. Ledger for some of his own reminiscences. Then we tried, together with Mr. (now Sir) Clements R. Markham, F.R.S., President of the Royal Geographical Society, to raise a subscription for Mr. Ledger among those who had benefited by his venture. The attempt failed. Mr. Ledger applied to the Dutch Government for some further recognition of his services. It was refused. We enlisted the assistance of an influential Dutch newspaper on his behalf, but in vain. Mr. Ledger's friends, however, kept arguing his claims with persistence; we wrote to the Ministry of the Colonies in the Hague, and now, after eighteen months of pegging away, the Dutch Parliament has at last recognised the justice of Mr. Ledger's claim and granted him the pension which we hope he may long live to enjoy, though he is already in his seventy-ninth year."

PLANTERS AND THE FAMINE.

We publish below a stirring appeal sent us by the Secretary of the U. P. A., to the Planters of South India, on behalf of the famine-stricken population of Upper India. We thoroughly believe the reply will be immediate and generous. Short crops and high exchange may render the amount each of us can spare less than in more prosperous years. But let every single planter, proprietor, manager or superintendent, do his utmost to uphold the fair name and fame of Planter, by contributing his quota. The appeal has been noticed with great sympathy and gratitude by the Native Press. Let us show by a ready response that our sympathy for the masses of India, by whose aid we have attained what prosperity we have achieved, is as deep as their bitter need:—

AN APPEAL TO THE PLANTERS OF SOUTHERN INDIA.

The Committee of the U. P. A. S. I. have decided to appeal to all Planters in Southern India (as far as possible, through the medium of the several District Planting Associations) for subscriptions and donations towards a Planters' branch of the Indian Famine Charitable Relief Fund that has now been opened.

It was suggested that money for this purpose might be taken from the U. P. A. Reserve Fund, but there is a strong feeling that this Fund, which constitutes a Trust, could not be rightly drawn upon for any such object. Writing with reference to this, the Chairman observes:—"As the Hon'ble Mr. Hodgson said, 'I have never known a Planter turn his back on a Subscription List opened in a good cause,' and I believe we shall raise a far larger amount by calling for donations than by paying down a sum from the Reserve. A better cause for liberality will never occur." Mr. Acworth remarks also:—"All should subscribe, poor and rich, Proprietor and Superintendent alike. A donation of Rs. 5 from him who can afford no more will be as welcome as that of Rs. 1,000 from the wealthy Proprietor. The Government of India has lately shown its sympathy with us in readily granting our petition for a Commission of Enquiry into our grievances. Let us now prove our gratitude by doing all in our power to assist that Government in combating one of the greatest calamities of modern times."

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Giving practical proof of his earnestness in this matter, Mr. Acworth has put his name down for a donation of Rs. 200. If others will follow this example in the spirit that has animated the Chairman, a Fund will be raised that will be of material assistance to the Government and will reflect credit upon the Planting community, while also serving to prove the oft-repeated assertion that this is not merely powerful and influential, but has the welfare of the country sincerely at heart.

The Secretary would remind all Planters that, though the Madras Presidency is free from actual famine, and is not expected to suffer from anything more serious than acute distress in two or three districts, the North-West Provinces and the Central Provinces are afflicted with wide-spread and intense scarcity of crops. In 1876-78, when this Presidency was devastated by Famine in its most severe form, all India came to the rescue, and the North was liberal in its assistance to the stricken South. The time has now arrived for this Presidency to reciprocate, not merely with sympathy but with practical and material aid. Planters are appealed to in the confident hope that they will realize that when any portion of the Indian Empire comes under the dire shadow of Famine, it is the duty of every citizen of that Empire to contribute to the best of his ability towards the Fund raised for the relief of the distressed. This is a case that should meet with a specially ready response from the Planter, who, as a tiller of the soil himself, can fully appreciate the sad position of the helpless agriculturist, to whom the earth has refused to yield the usual supplies.

The Secretary ventures to suggest that while rich donors may prefer to give lump sums at once, poorer men may find it more convenient to subscribe, month by month, some small amount, which, when repeated many times, will do much to swell the total raised. He is prepared, therefore, to open a list of *Monthly Subscriptions* as well as a list of *Donations*, and he trusts that both will soon contain many names. Planters have numerous Subscription Lists already before them, and many have only poor crops to look forward to. Yet the gravity of the present distress is so great, that a considerable amount of personal inconvenience and self-sacrifice should be cheerfully submitted to. Fortunately, the scourge of Famine visits India less frequently than of old, and the present call for help will certainly not be often repeated. This should be an extra inducement to liberality on the present occasion.

It goes without saying that the more prompt the aid, the greater its effectiveness. The Secretary trusts, therefore, that individual Planters will promptly send in their Donations or Subscriptions to the local District Planting Association or to the U. P. A. by which they will be passed on to the Provincial Committee of the Famine Charitable Relief Fund.

UNITED PLANTERS' ASSOCIATION
OF SOUTHERN INDIA,
MADRAS, 12th February 1897.

HARRY ORMEROD,
Secretary, U.P.A.S.I.

JADOO CRITICISED.

"TODA" writes as follows, under date of 13th instant:

As you published Colonel Halford Thompson's letter, which appeared in the *Madras Mail* of 12th January, criticising a letter of mine *re* Jadoo Fibre, which was inserted in the *Mail* of 19th November 1896, I would ask you in fairness to kindly publish in the next issue of *Planting Opinion*, my reply to Colonel Halford Thompson's letter which you will find in the *Madras Mail* of 4th February, signed "Toda."

We regret we have not sufficient space to quote the letter in full, which occupies a full column of very small print in our contemporary, but we trust "Toda" will find the omissions in no way impair the weight of his crushing rejoinder.

Colonel Thompson says: "It is difficult to conceive how £7-10-0 per ton at Madras (now reduced to £7) could by any means swell to Rs. 170." Messrs. Parry and Co. tell me they can supply the fibre at Rs. 7 per bale of 1 cwt., on rail at Madras. Add another Rs. 30 for cost of carriage, (a fair estimate, seeing that the majority of estates are many miles from a Railway Station,) and the present price comes to Rs. 170 per ton. In Colonel Thompson's prospectus it was claimed that Jadoo fibre would be useful in two ways, so far as coffee planting was concerned. (i) In the "raising of nursery plants." (ii) In "bringing on supplies," and with these uses I dealt in my original letter. In regard to the first I said "now as to the cost of raising nursery plants." The prospectus states that a 3 bushel sack of Jadoo should be sufficient for 'raising 450 (nursery) plants.' The ton is said to contain 60 bushels, so that the cost per plant would be about $3\frac{1}{2}$ pies. This means an expenditure of—

about—Rs. 1,650 on the purchase of Jadoo alone, in the case nursery for a 50 acre clearing, planted $5' \times 5'$." Colonel Thompson says this calculation is wrong because I "have taken the quantity of Jadoo required for a seed bed large enough to raise 450 seedlings at a time"—it will be observed that Colonel Thompson admits the quantity given in the prospectus, a 3 bushel sack for 450 seedlings, is correct—" (but which could be used again and again so 20,000 seedlings could be raised from it) as the basis of a calculation based upon the original 450 seedlings being the whole quantity, could be raised out of that amount of Jadoo." The circular says nothing about the possibility of using a given quantity of Jadoo "again and again," but this does not affect my calculation in the smallest degree. If it takes a 3 bushel sack to raise 450 seedlings (as Colonel Thompson admits) then, with the price of a ton at Rs. 170, each seedling would cost $3\frac{1}{2}$ pies, and a nursery for a 50 acre clearing planted $5' \times 5'$ would entail an expenditure of Rs. 1,650. Colonel Thompson draws an alluring picture. You buy a 3 bushel sack of Jadoo, and raise your 450 seedlings by its aid every year for the term of your natural life. Then you leave it to your successors as an heirloom, who do the same, and so on to the end of doom. The only drawback is that as a 50 acre clearing would require a nursery of 90,000 plants as a minimum, and as you can only raise a nursery once a year, it would, at the rate of 450 plants per annum, take about 200 years to plant the clearing up. The light that Colonel Thompson throws on Jadoo, viz., that it can be used for a series of years as it does not lose its efficacy, would of course reduce the cost of a nursery in subsequent years, so far as the purchase of Jadoo is concerned. Before I leave this question I would add that it is "difficult" for one not in the know "to conceive" how Jadoo can be used again and again. The testimony printed with the prospectus, and those given in the *Madras Mail* of the 9th December, imply that, when Jadoo is used in a nursery, it encourages root growth in a wonderful way, and that, when seedlings are large enough to be put out in the field, the fibrous mass of fibrous roots. How then is the fibre to be retained for future use, without serious injury to these fibrous roots? I trust Colonel Thompson will make this point clear. With regard to the second use I said (I quote from my original letter), "But the figures pale into insignificance before the cost of 'bringing on supplies.' The prospectus gives $\frac{3}{4}$ peck as the quantity each seedling should receive.

= $\frac{3}{16}$ bushel,
or, say, 1 bushel for 5 plants,
= 1 ton for 300 plants,
= 9 ans. per plant."

On this head Colonel Thompson says "the amount of Jadoo required for raising seedlings in beds to supply 50 acres would be certainly not more than 5 cwt. and would cost therefore Rs. 1,650 instead of Rs. 1,650 as calculated by 'Toda.'" Every word of this sentence is inaccurate, and it is here that Colonel Thompson passes into a state of more "hopeless confusion" than anywhere else in his letter. In the first place I never said that "the cost of raising seedlings in beds to supply 50 acres would be Rs. 1,650." My calculation in which those figures were given had reference to the cost of a nursery for planting up a 50 acre opening. Colonel Thompson is evidently unable to distinguish between planting a new clearing, and supplying an old estate. (Query. Has he ever seen a coffee estate?). Further the large quantity of Jadoo— $\frac{3}{4}$ peck—given in the prospectus as the amount necessary for each seedling shows clearly that the prospectus did not contemplate the "raising of seedlings in beds" as supplies. It meant that that amount of Jadoo should be applied to each supply in the field. Again it is not in the power of Colonel Thompson or anyone else to say the amount of Jadoo required for "raising seedlings in beds to supply 50 acres would be certainly not more than 5 cwt."—or, fixed amount, for the simple reason that "supplying" is a variable quantity. Granting that $\frac{3}{4}$ peck is the right amount of Jadoo for each supply (and Colonel Thompson does not deny it), how many plants would 5 cwt.—the amount fixed by Colonel Thompson—be sufficient for a 50 acre clearing—cover? The ton contains 20 bushels, so 5 cwt. would contain $\frac{1}{4}$ of this or 5 bushels. 5 bushels for 5 plants, this would mean $(5 \times 15) = 75$ supplies. A 50 acre clearing (lucky dog!) might need only 75 supplies while B's clearing of a similar extent might need 7,500. What becomes of Colonel Thompson's fixed price of Rs. 42-8 for supplying 50 acres? On the lines marked out by Colonel Thompson

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possible to arrive at any definite conclusion as to cost of supply. My calculation is the correct one, viz., that if it takes $\frac{3}{4}$ peck supply, then it costs 9 ans. per plant, with Jadoo at Rs. 170 ton. One thing is obvious from Colonel Thompson's letter that, never great his theoretical knowledge of the merits of Jadoo may be, he knows absolutely nothing about its practical application to coffee. The figures given in the Jadoo prospectus are either right or wrong (and Colonel Thompson in his letter implies they are right). These figures are a 3 bushel sack of Jadoo for 450 plants in the case of a nursery, and $\frac{3}{4}$ peck for each supply (to be applied of course in the field). If these quantities are right, my calculations are right, in spite of the tissue of nonsense contained in Colonel Thompson's letter. If they are wrong, the sooner Messrs. Parry & Co. (who have a practical knowledge of coffee planting) correct them, the better for everyone interested in the question of Jadoo coffee.

WEST INDIAN COCOA.

LOOKING around us, our industries present a very gloomy aspect under the existing order of affairs, but, as I said fifty-five years ago, I venture to say to-day, we may work better than we do, and surely the rigid training we have had in the school of adversity during the greater part of the last half-century should open our eyes to what others are doing, and sharpen our wits to cope with and excel them too.

Grenada, following the example of her near neighbour, Trinidad, some years ago verged from sugar lines to Cocoa, in which commodity both places have extended cultivations, until the cocoa industry becomes the order of the day.

Having any knowledge ever of the rapid strides obtained by agricultural and manufacturing processes in the world, where capital views and available funds are judiciously brought to bear on any industry, one is fairly puzzled at finding men claiming the possession of intelligence, yet making no effort to improve their methods, and quite indifferent to results, present and future; but matters are still worse, when taking a retrospect of sugar production a half century ago we find growers, when scientific measures were but little known, and certainly never applied to the culture, fertilizers only obtainable from composts of their own rude manufacture, agricultural implements unheard of, and void of thousand-and-one convenient appliances now at hand, turning out four tons of muscavado to the acre, while in the present age of advancement with teeming volumes of literature shedding light at every point, we often find it turning out but one, and even less. Surely we are better able now to make our land yield a more bountiful return than in the past.

In order to further the objects leading to this paper, I desire to review the detailed cost for culture of an acre of cane for sugar, and in doing so I will suppose I am dealing with land in the state of copse, with perhaps some sturdy saplings scattered about. The word clearing must be understood as not referring to the extraction of roots, the practice being that large stumps, about three feet high, remain through first plantings.

Cost as follows:—Clearing, ten shillings; tillage by fork, paid at thirty square rods for one shilling, say fifteen shillings; drainage, at twelve feet apart, two feet wide, one foot deep, at one shilling per rod, say thirty shillings. Holing, twelve shillings; carting and hauling plants, planting and supplying, eight shillings; weeding, sixty shillings; raising and supplying home-made manure, sixty shillings; miscellaneous items, five shillings. It is plain that an acre may be grown at a cost of ten pounds. If the condition be that of forest, add one pound to the estimate, and of this at least one-half may be reconped by the adoption of measures I shall presently point to, but taking it at £10, and output three tons of muscovado, in lieu of the former time four acre, at selling price of £10 per ton, from which

strike even £2 for manufacture, would leave a margin of £14 per acre.

When a grower who is not possessed of manufacturing works is ready for reaping he cuts his cane and ties it in small bundles, and some neighbouring mill-owner sends for it, and manufactures for half of the sugar, latter paying subsequent cost.

Value of land of course differs widely under various circumstances, such as locality, nature of soil, formation, agricultural conditions, etc., but at the present day thousands of acres may be found here, and perhaps with the exception of Barbados, in all of these Colonies, at a mean average of (putting it high) £5 per acre, which in tracts of say 200 acres or thereabouts, would include cultivated with bearing crops, uncultivated, forest, etc., and very probably some sort of residence, if not other fabrics, while Government grants may be obtained at £1, or less, per acre, with nominal deposits.

Now, the looked for yield of cocoa may be placed at five bags per acre, an average of 180 pounds each, worth in local market, at this time of low rate, 3d. per pound, and in England £3 per bag. On the point of yield there is great diversity of opinion, many more acres yield two, than five bags, while there are instances of seven and even eight in localities said to be real cocoa land, but I think the difference comes as much, if not more, from *treatment bestowed on soil*; I know of a solitary instance where the output is said to be ten bags to the acre, and a place too, proverbial for former poverty of soil, but the secret is, or secrets are, first the Proprietor is resident, and management conducted under his eye, a portion of the estate below water sources is irrigated, and last, but not least, there is a cart continually hauling manure from the stables in town about three miles distant, while manuring cocoa generally in the island is not much followed up. I have visited the spot when cocoa was in full bear, and I must admit I have never seen trees so laden, or apparently keeping their pods so well.

In order to arrive at some accuracy in estimation of yield, I would take mean average between two and ten bags, as it is plain that the soil can give it, if rightly dealt with, so I will count six bags at £3, the cost of up-keep from time of trees maturity, together with reaping, is generally supposed to be 10s. a bag. These figures then go to show that one possessed of 100 acres of good bearing cocoa, may expect an annual receipt of £1,500, from which strike £100 to cover expenses of bags for shipment, Insular transport, taxes, etc., nothing more comes in that I am aware of, save, perhaps, up-keep of a couple of mules, and an overseer's salary, which another £100 would amply cover.

The chief drawback to cocoa culture is that one cannot see their money back for five or six years; except on the wise system pursued in Jamaica, where it is said, that when the cocoa has matured, the field has made more money at the same time on production of banana, and which policy is open to all, for if even geographically precluded from extensive commerce in the fruit of the banana or plantain tree, it is highly probable that the fibre, which is produced in large quantities, may be made a source of profit if in the hands of those capable of placing it on the economical lines of an industry, added to which, judging by the numerous articles we read of late on the subject, there may be some hopeful prospect in banana flour soon becoming an important branch of commerce.

There are of course numerous other fibres that may be quite as profitable, which I am not prepared to deal with, but in the absence of all this, as at present, the many edibles including plantains that are now imperfectly cultivated on the spaces intervening the young cocoa plants, become extremely helpful in domestic requirements, and I am convinced if brought under some regimen of agricultural order, could very materially

is so well-known now that Messrs. PHELPS & CO.'s prices, notwithstanding that they are considered high, are so much below those of London, that their trade is advancing by leaps and bounds.

cheapen the populations' food, and if not totally dispense with the vast importation of stuffs grown in America, unquestionably curtail it to a considerable extent. Other products I think indisputably deserve careful deliberation, and I can see no possible doubt of their claim to commodities of export order, among which I will choose three as having some knowledge of, by practical experiments.

Firstly, tobacco, I have successfully grown the weed, and obtained in some descriptions leaves measuring thirty-three inches long, trees averaging six ounces when cured, and yield per acre, in some instances over one thousand pounds of marketable product. I found it very saleable at one shilling per pound, while sometimes for cigar manufacture I could easily have got one shilling and sixpence. I have made cigars which were also very saleable.—*Produce World*.

(To be continued.)

FRUIT AND VEGETABLE DRYING.

ONE of the principal reasons that has prevented the expansion of the European fruit and farming industries of the Nilgiris and other districts has been the complete dependence of the growers on the local demand, supplemented by the irregular and capricious requirements in the large towns. For all practical purposes the English orchardist in India has been, and is still, entirely at the mercy of the native dealer. Yet there is no reason whatever that we can discover—and we have devoted a considerable amount of time and trouble to the investigation of the subject—why this deplorable state of things should continue. In India itself there is a proportionately huge demand for all kinds of English fruit and vegetables, both in their fresh and preserved forms. To meet the former demand, certain grave difficulties touching on details of distribution and transit must first be overcome. With these it is not our intention to deal in this paper. We shall confine ourselves to the latter subject, namely, how to meet the demand for dried fruits and vegetables. The process of drying is not at all difficult, and the initial experiments can be carried out at a minimum of expense, a great desideratum in any such new departures. The cheapest and smallest form of dryer is what is known as the Geisenheimer "Herd-dorre" or hearth-dryer, the cost in Germany being only £1-10s., no very ruinous expense. The fruit and vegetables required for experiment can be readily bought in the local bazaars, and as the "Herd-dorre" simply requires bottom heat—obtained by placing it on an iron stove or hot plate—a series of exhaustive experiments might be conducted for not more than one hundred rupees all told. A practical point of some importance lies in the fact that once thoroughly dried, the fruit, etc., may be packed in ordinary wooden boxes, bottles, etc., and will keep perfectly well, though not excluded from the air. The success of the system once demonstrated, larger machines such as the American "Ryder," or the larger Geisenheim pattern (cost £13 in Germany) could be obtained with no great outlay of capital. The "Ryder" may be obtained from Messrs. Mayfarth and Co., Frankfort-on-the-Main, who undertake its manufacture in Germany.

The following extracts from a paper by Dr. Augustus Voelcker, published in the September number of the *Journal of the Royal Agricultural Society of England*, will be

found full of interest and practical information. Voelcker first describes a visit he made to Germany, preparation for the exhibit of fruit-drying at Leices held the same year by the R. A. S. of England:—

As the result of the inquiries which I made, I ascertained there were in particular two machines for fruit and vegetable-drying which had met with the most favour in Germany for use on a small scale, as distinguished from factory use. These were, first, American machine, the "Ryder," manufactured in Germany, stated above, by Messrs. Ph. Mayfarth and Co., of Frankfort-on-Main; and secondly, the "Geisenheim" machine, manufactured by Mr. Valentin Waas, of Geisenheim-on-the-Rhine. The former these has, as previously stated, already been exhibited at the Society's Shows, viz., at Nottingham in 1888, and at Windsor in 1889, on which latter occasion it was awarded the prize in Class (Implements), "Fruit and Vegetable Evaporator suitable for use on a Farm," there being no other competitor in the class. The machine is fully described and figured in the *Journal*, vol. 2nd series, 1889, part 1, pp. 107-8; and part 2, pp. 494-6. It is constructed of wood. The "Geisenheim" evaporator is a machine of later introduction, and is made entirely of iron, having the advantage thereby of not catching fire. It is only intended for use on a small scale, as, e.g., on a farm, while quite small sizes are also suited for domestic use. It is really the outcome of the experience of, and repeated experimental trial by, the instructors at the aforementioned Government "School of Fruit and Vine Culture," established at Geisenheim-on-the-Rhine, in the famous Rheingau, lying near to Rudesheim, and not far from Bingen, which is, however, on the opposite side of the river. So well has the machine answered, that Mr. Valentin Waas, to whom the manufacture is entrusted, has now been able to establish a regular factory for production, and already a considerable number of machines are being yearly turned out. They are manufactured only at Geisenheim Works, and hence by Mr. Waas himself, while the whole sale is practically under the control of the Government School. This machine has of recent years competed most successfully at different exhibitions with the "Ryder" machine, and generally allowed now to possess certain distinct advantages over its rival. On account of this it was selected for use in the Fruit and Vegetable Drying Demonstration held this year at the Society's Show at Leicester.

Mr. Waas makes the machine in several different sizes and in somewhat different form, but the principle is the same in all. There is, first, the small "Herd-Dorre," or "hearth-drier," a machine simply for household use, which can be placed loose upon an ordinary oven (such as is to be found in every German household kitchen range, or hot plate. Its cost in Germany is only from 10s. to 35s. according to size, and it needs no special firing. There are also other kinds, called "Wander-Dorre," either adaptable to any firing arrangements, or having special ones of their own. There are different sizes of this, but all are such as can be employed on a small or moderate scale, and not for factory purposes. I decided to select for demonstration the two varieties above mentioned, viz., the small drier (Herd-Dorre) for household use, and a larger one ("Wander-Dorre No. E," as it is described in Mr. Waas's catalogue), with special firing, for farmers' use.

From the foregoing description (omitted on account of our reference to illustrations and diagrams that we are unable to produce.—Ed.) it will be clear that the Geisenheim machine, I exhibited at Leicester, is an extremely handy one, which may be put with ease anywhere, and which requires no special room for setting it up in, for it may even be used in the open. A couple of wooden bars fitting into rings, one on each side of the oven, and the whole to be lifted by two or more men and placed where required. The whole machine weighs about 4 cwt., its height is nearly 8 feet, and the cost (in Germany), as already stated, 13l. The consumption of coal is about 40 lb. in 10 hours. If fixed in a shed or shed, all that is needed is to carry the smoke outlet pipe to the exterior, and to set the machine on a brick or stone flooring to prevent fire. At Leicester the demonstration was held in a covered-in wooden building. In front were arranged, first, the larger Geisenheim machine, No. E, this being placed merely on a few ordinary bricks resting on the wooden flooring, the joint

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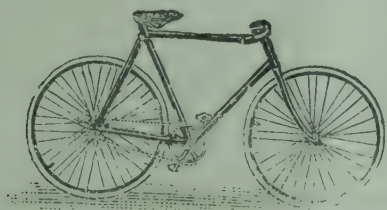
Tea, Assam Hybrid and Indigenous of high class jats, China Tea, Cacao, best Forastero Trinidad varieties, Sterculia Acuminata (Kola nut), true superior variety, Hevea Brasiliensis (Para Rubber), True Maragogipe, Liberian and Arabian Coffee, Nutmeg, Clove, Cinnamon, Cardamom, Vanilla Planifolia (true Mexican variety), Erythroxylon Coca (large and small sized kinds), best Sumatra Tobacco, Mangosteen, Sapodilla, Giant Kew (fruit weigh from 10 to 28 lbs. and over) and twelve fruited Pine Apple, E. Umbrosa, Fourcroya Gigantia, Artocarpus incisa (seedless Bread Fruit), Arnatto, Kapok, Coconut several varieties, Penang Areca nut (large), Landolphia Kirki (African Rubber), Teak and numerous other seeds and plants. Price on application. Boehmeria nivea (Rhea) fresh seed Rs. 5 per ounce (about thirteen hundred seeds may be raised to the ounce, or say 20,000 per lb.) Erythrina lithosperma, new crop of seed Rs. 3 per 1,000 post free, cash with order.

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the bricks being filled up with sand, while the smoke flue was led outside the building. The smaller machine, the Herd-dorre, was placed on an ordinary kitchen range, similarly set on bricks, the smoke stack being led through the roof. In both ovens a like ordinary coal was burnt. Placed on a long table on one side were the different machines for cutting, slicing, &c., the fruit and vegetables, and also specimens of the finished products. The rest of the shed was fitted with raised tiers of seats for spectators. Divided off by a wooden partition was a small store-room for the supplies of fresh fruit and vegetables. Two regular demonstrations were given by myself, viz.: at 12 noon and at 4 P.M. The manual work of manipulating the fruit and vegetables, both during demonstrations and in the intervals between them, was done by M. Gernet, who was fully conversant with the working both of the Geisenheim machine and the "Ryder" apparatus.

The method of setting fruit or vegetables to dry is really a simple one, and can be readily acquired. A fire is lighted in the oven, and air passes in at the bottom opening, is heated on its passage, and is distributed by a deflector spreader, causing thus a free circulation of heated air through the trays placed in the upper part of the apparatus. A thermometer marks the temperature reached, and this latter can be modified by the admission of more, or the exclusion of, fresh air through the valve on the spreader. In case of the heat being too great, it may also be lessened by opening the fire-box, or by raising the lever and removing the top of the trays altogether. Ordinary coal can be burnt, so also wood, coke, &c. The sides being double-cased, and the space between being filled with sand, ashes, or some slowly conducting material, very little heat is lost, as can be readily seen by placing the hand anywhere on the outside of the apparatus. The fruit or vegetable, after being cut, sliced, or otherwise prepared, according to their several requirements, are placed on the wire netting of the wooded trays in succession. The fluting of the wire netting allows of a larger drying surface being exposed, and more material can be dried, inasmuch as one piece does not, as a rule, come in contact with its neighbours, and so dries better and more evenly. In this machine are thirteen large trays or frames, and each frame is again provided with a smaller inner tray fitting into the larger one, and enabling almost as much material again to be dealt with. There are two ways of filling the upper part of the apparatus, the one being by putting each tray in successively from below, until the one first put in gradually rises to the top; the other way is by putting in each tray, as filled, at the top of the apparatus, and letting it work its way down until it reaches the bottom. Which way is to be adopted depends upon the kind of fruit or vegetable. Those kinds which, like apples, pears, and other fruit generally, are of a more or less hard nature are placed at the bottom, i.e. where the heat is greatest, the trays ascending successively until the top, or coolest part, is reached, while such materials as stone-fruit, berries, &c., which would, if at once exposed to strong heat, burst the skin and let the juice escape, are placed from the top, and the trays gradually work their way down. In this way the skin is not cracked, but slowly dries up and hardens, retaining the juice within the fruit.

The lifting of the trays for filling from the bottom is effected by pulling over the lever handle. This raises all the trays through the space of one tray, leaving an empty space into which a new tray can be slid. By placing in the notches of the uprights small iron bars already spoken of, across the front and back of the top part of the machine, and then pulling over the lever, any individual tray can be examined at any stage of the process, and removed to either a hotter or a cooler part of the apparatus, according as the contents may require. This is a great convenience when more than one kind of fruit or vegetable is being dried at the same time, as it may be necessary to manipulate one lot in a different way from another as regards the heat to which they should be severally subjected. A special point as regards the drying is that the consumed air of the fire does not come into contact with the fruit, &c., so that the latter is never injured by heat but has only the heated fresh air to pass over it.

In the case of the smaller machine the filling of the trays from the top above or below is effected in a similar way to that of the larger machine, there being a similar lever arrangement. But

there are 9 trays only, and these are flat, and not fluted or duplicated.

Almost every fruit or vegetable must undergo some kind of preparation before placing it on the trays of the machine. These modes of preparation may be either purely mechanical, such as the paring, coring, and slicing of apples, or the slicing of carrots, French beans, &c., or it may be a preparation by steaming, salting, or the like; or, again, there may be the two kinds combined. What is done will depend entirely upon the kind of material. Thus, apples are pared and cored if dried whole, are sliced as well if required in "rings," while pears and almost all vegetables are not merely peeled or sliced, but are steamed as well for a short time preparatory to drying. This steaming may be effected by keeping the material in an ordinary "steamer" on a stove for six or seven minutes, or by using, in case of a large quantity, a special steaming vessel or *Kochkessel* (cooking kettle). In default of steaming, simple immersion in boiling water for a few minutes will do. Vegetables, generally, are also first steeped in water with salt. This steeping is frequently done, too, with apples, and helps to keep their colours, but when it is required to have apples of a very white colour, they are bleached by exposing them to the fumes of burning sulphur for a short time. Cherries and many stone-fruits have only the stalks removed, while with others, as e.g., apricots, the stones are taken out as well.

There were on exhibition at Leicester several very ingenious machines designed to pare and core apples, or to do this and also cut them into "rings." Also others for peeling potatoes, for cutting them into slices, and also into "chips;" others, again, slicing French beans, for slicing carrots, cutting up cabbage, &c. These are mostly of American origin, though now manufactured in Germany as well. Some of these labour-saving machines have been already described in the Journal. Thus, vol. xxv., 2nd series, part 2, 1889, contains (p. 497) an account of an American "paring and coring" machine for apples. It is called the "Eureka," and is made by the Goodell Co., Antrim, New Hampshire, U. S. A. The machines actually used at Leicester were obtained from the Gebrüder Eberstein, Altmarkt 6 and 7, Dresden, Saxony, and comprised an apple and potato parer, costing 11s. 6d., a French bean slicer, 6s., and a combined chopping and slicing machine, suitable for potatoes, carrots, cabbage, &c., which cost 33s. Mr. Val. Waas, Maschinenfabrik, Geisenheim-on-the-Rhine, Germany, also supplies several of these machines, including an apple-parer for 4s., and a very handy combined peeler, corer, and slicer for apples called the "Unicum," and costing 24s. Messrs. Mayfarth & Co., Frankfurt-on-the-Main, Germany, have also very similar machines for sale.

The kinds of fruit and vegetables used at Leicester for the demonstration were necessarily dependent upon what was procurable in the market at the time. The following were employed:—

FRUITS.	VEGETABLES.
Apples (Tasmanian)	French Beans
Apricots (French)	Peas
Cherries	Cabbage
	Cauliflowers
	Carrots
	Onions
	Potatoes (Teneriffe)

Despite the drawbacks incidental to a demonstration carried out on a Show ground, with people continually coming in to see what was going on, and the impossibility of Mr. Gernet being able to give the continued attention necessary to the production of the best specimens, very fair results indeed, it was universally allowed, were obtained, and much of the fruit and vegetables dried in the shed was found, on soaking them again in water (as would be done in actual practice), to have retained to a great extent their original colour, and to have by no means lost their flavour. Moreover, I was careful to keep over specimens of the fruit and vegetables dried on the Show-ground, and have retained them. At the time of writing, these remain perfectly good, and are, on the whole, very good illustrations of what can be done at a moderate expenditure, in saving in a state in which it can be easily kept sound and good, as well as in a portable form, what would otherwise be absolutely wasted.

Next, as regards the forms in which the various fruits and vegetables are prepared: 1

[1 Much detailed information is contained in the following volumes, neither of which, however, has been translated into English: (1) *Traité*,

has been remarked several times that no doubt PHELPS & CO. will raise their prices, now that they have taken their Ladies' Department to 4, Russell Street, but it is a mistake.

pratique du Séchage des Fruits et des Légumes. Par J. Nanot, Directeur de l'Ecole Nationale d'Horticulture, Versailles. L. Tritschler. (2) *Dörbbüchlein für den kleinen Haushalt.* Verfasst von R. Mertens. Wiesbaden: Rud. Bechtold & Co.—Ed. of J. of R. A. S. E.]

I. FRUITS.

Apples.

Apples were dried at Leicester in three forms:—(1) whole, *i.e.* simply peeled and cored; (2) sliced, the whole apple, after peeling and coring, being cut into quarters or slices; and (3) as "apple rings," the peeling, coring, and cutting into rings being all done by a single machine, the "Unicum," already spoken of. The whole apples, slices, or "rings" are put for about five minutes in water to which salt has been added in the proportion of about one ounce to three quarts of water. This supplies the place of "sulphuring," to which objection may be taken, but if one or the other be not done, the apple slices and "rings" will turn a red-brown colour on drying, and will not compare in appearance with the bleached or sulphured "rings" that are imported. The pieces or "rings" are laid on a tray, one piece only just overlapping the other like roofing-tiles. It should be mentioned that, at starting, the whole of the trays are put in the upper framework, the temperature of the oven being, as registered by the thermometer, 180°-210°F. (80°-100° C.); then, when, as with apples, filling takes place from the bottom, a tray is taken from the top, and as it is filled it should be pushed in below the rest, by using the lever. It is left in this position for about ten minutes or a quarter of an hour. Meanwhile, other trays are being filled, and each in succession is pushed in below its predecessor, until the whole frame of thirteen trays is full, and the heating may be then carried on continuously. The time required for drying apples will vary with the kind, the ripeness, and also the form in which they are prepared, "rings" taking, of course, much less time than slices, and whole apples longest of all. The trays should be examined from time to time, the driest fruit being placed higher up, or removed as ready, and the least dry being placed nearer the bottom where the heat is greater.

After all the fruit has been removed as dry, it is well to keep it exposed to the air for six or seven days, after which it may be packed in boxes or bottles; exclusion from the air is by no means necessary. If properly dried it will keep almost indefinitely. At Leicester I had on exhibition apples, pears, plums, strawberries, &c., one year old, and still remaining perfectly good. When required for use again the fruit is soaked in water for six to seven hours and then is ready.

The description of the filling of the trays, and the drying and other processes, has been given at some length here, inasmuch as, with certain modifications necessary in the case of different kinds of fruit and vegetables, it is practically applicable to the drying of them all. The chief modifications are that pears and all vegetables require to be steamed for six or seven minutes after being mechanically prepared, and that, while apples, pears, apricots, and other hard fruits, as well as all vegetables, are filled in from the bottom to the top, stone fruits and soft fruits, like cherries, strawberries, &c., are filled in from the top downwards, for reasons already given. Herbs, when required to be dried, are not steamed beforehand, as they would lose a good deal of their flavor.

The machine No. E. (Wander-Dörre) will hold at one filling, and with the single trays, about 180 lb. of whole apples, which will take about four hours to dry. If the apples be cut, about 125 lb. will go in at a time in the single trays, and take about three hours to dry; while with apple "rings" 90 lb. with the single trays, and 155 lb. with the inner trays as well, can be dried in 1½ to 2 hours. From 100 lb. of fresh apples 10 to 13 lb. of dry produce will be obtained. In the smaller machine (Herd-Dörre) the time of drying is considerably longer, and the quantity that can be dealt with is only about 45 lb. of whole, 25 lb. of sliced, or 15 lb. of "ringed" apples at one filling. Naturally, too, the heating cannot be so well regulated. The expense of firing is, however, no additional item of the cost, being merely that of the oven as required for general domestic purposes; the larger machine No. E., as stated before, burns about 40 lb. of coal in ten hours, and the machine costs (in Germany) £13, the smaller machine costing only about £1 10s.

Pears.

Pears for drying purposes ought not to be quite ripe. They are peeled, and either dried, whole, or, more generally, are divided, and

the seed-vessels cut out, the stems being left on. They then require steaming for eight or ten minutes, and are filled in from the bottom upwards. The temperature used is the same as for apples (180°-210°F.), and the pears will take five to seven hours to dry if divided, or seven to nine hours if whole. The larger machine will take 145 lb. of divided, or 200 lb. of undivided pears, the smaller machine 25 lb. and 50 lb. respectively. From 100 lb. of fresh pears 12 to 16 lb. of dried ones will be obtained.

When preparing the pears before drying, the flavour will be improved if a little sugar be added to the water in which they are cooked, and to this may be put the juice of the removed seed-vessels and peelings.

Apricots.

Apricots are simply cut in two, the stones being taken out, the fruit then dried just like apples, at about 212°F. They will take ten to twelve hours to dry: the larger machine will hold 140 lb., the smaller 35 lb., while from 100 lb. of the fresh fruit 10 to 12 lb. of dried will result.

Cherries.

Cherries should be as ripe as possible before drying. They are generally speaking, not stoned first, but only the stalk is removed. Sometimes it is preferred only to remove the stalks after the cherries have been dried for some little time, so as not to let the juice escape. The trays are filled in from above, as, if put at the bottom in the strong heat of the lower part of the frame, the skin of the fruit would be split, and the juice flow out. A lower temperature than for drying apples is required, *viz.* about 140°F. (60°C.), and from four to six hours is necessary to complete the drying. The larger machine will hold 160 lb. of cherries, the smaller 40 lb., and 100 lb. of fresh cherries will yield 25 to 26 lb. of dry fruit.

Damsons would come under the same heading, as regards treatment, as cherries.

Plums.

Plums should be as ripe as possible. The stems are removed, the plums placed in the trays with that end upwards from which the stem was drawn, so that the juice does not run out. The plums, also cherries, are all the better if they can be put out and dried in the sun for two or three days before placing them in the evaporator. Plums take a very long time to dry, 12 to 16 hours, or even more. The proper temperature is 180°-212°F. The larger machine will take 250 lb., the smaller 45 lb., of plums, and 100 lb. of fresh plums will give 30 lb. of dried.

Strawberries, &c.

Such fruits as strawberries, bilberries, &c., can quite easily be dried, and they retain their flavour satisfactorily. They are filled in from above, just as with cherries. They require drying for four to five hours at not too high a temperature, say not higher than 140°F. for cherries (140°F.).

Raspberries and Gooseberries are fruits that cannot well be dried, for they shrink almost into nothing.

II. VEGETABLES.

As previously noted, these all (herbs alone excepted) require, in addition to the peeling, slicing, or cutting up, to be steamed or cooked for five to seven minutes before they are dried. This is necessary in order to keep their colour and to prevent their becoming hard. When dried on a small scale the cooking in boiling water is generally sufficient. In factories, and where dried on a large scale, regular steaming apparatus is used. Like apples, vegetables are always filled in from below upwards. The temperature for drying vegetables is about 195°F. (90°C.) or rather less.

French Beans.

These are cut into strips by a special machine (already described) and cooked for a few minutes. A little soda added to the water helps to preserve their bright green colour. About 80 or 90 lb. of beans can be put in the larger machine, 12 lb. in the smaller; they will dry in two to four hours, 100 lb. of fresh beans giving 12 lb. of dry.

Peas.

Peas require simply shelling and a few minutes' cooking. They should not be quite ripe, and are laid thinly on the trays, and take two to three hours to dry. The large machine will take 125 lb., the smaller 20 lb., and 100 lb. of green pods will yield 10 to 12 lb. of dried peas.

Ladies in the mofussil do not always realize that they can by corresponding with PHELPS & CO. at their London Branch at Russell Street, keep in touch with all that is newest and most fashionable in the world.

Cabbages.

With cabbages the midrib of the leaf is cut out, and also the ribs when they occur; the cabbages are then cut up, cooked and dried thinly on the trays, and dried as usual for about three hours. At 50 heads of cabbage can be dealt with at a time in the larger machine, 9 in the smaller, and from 100lb. of green stuff about 7lb. of dried cabbage can be got. Red cabbage must be cooked only for a short time, or it will lose its colour.

Cauliflowers.

Cauliflowers are broken up into single pieces or lumps, cooked for five minutes, and dried like cabbage. They often get a brown tinge in drying, but, on cooking again, the white colour reappears. Three to four hours is required for the drying; about 50 heads can be dealt with in the larger, and 10 in the smaller machine. From 100lb. of the fresh cauliflower heads some 4 to 5lb. of dried cauliflower will be obtained.

Carrots.

Carrots are cleaned, scraped, and cut into slices of about one-half inch thickness. After cooking they are spread lightly on trays and dried for three to three and a half hours. The larger machine will hold 75lb., the smaller 15lb., of carrots; 100lb. of the vegetable yield about 8lb. of dried carrots.

Celery.

Celery is cleaned, peeled, and cut into strips one-eighth inch thick. It must be cooked until half soft, and then laid on trays just as apple "rings." The drying takes three to four hours, and from 100lb. of fresh celery about 4½lb. of dry celery can be got. The larger machine will take 50lb., the smaller 9lb.

Onions.

With onions the shell is removed, and they are cut into slices at a quarter inch thick. They take three to four hours to dry. The larger machine can dry 50lb., the smaller 11lb. at a time, and from 100lb. of fresh onions 10 to 12lb. of dried onions may be obtained.

Potatoes.

After washing and peeling, potatoes can be either cut up into thin slices or into strips. When putting them in boiling water before drying it is well to add some salt to the water. They will dry in three to four hours at a temperature of 200°-212°F. (90°-100°C.).

Herbs, &c.

Various herbs, such as Parsley, Mint, Rosemary, Lavender, Wood-sage, &c., can be similarly dried. They must not be put in boiling water before drying. With some, such as parsley, mint, &c., it is a good plan to grind them to a powder after drying.

Mushrooms will dry perfectly well, but *Asparagus* is of too watery texture to deal with successfully by drying.

SELECTION OF FRUIT.

When fruit is intended for sale, care must be taken in the selection of the fruit, alike as regards uniformity of kind, size, ripeness, soundness, and quality. In factories this is a most important matter, much as the price obtained depends so largely upon the uniformity of quality, colour, and appearance generally. This can never be secured if a number of different sorts of apples, for instance, are mixed together, or if fallen fruit is used along with sound fruit. In England and in Germany one and the same variety is not often grown over a considerable area, whereas in America it is. Certain varieties, too, are better adapted for drying than others; and, lastly, by processes employed in a factory much greater uniformity can be obtained than by the use of small machines such as those described in this paper. At one factory which I visited in Germany the apples used for drying were mainly those from trees grown along the high roads, and were sold annually by auction. These were practically of one kind. It is quite a mistake to suppose that, if a factory for fruit-drying were established in a neighbourhood, the factory would be ready to take any and all the surplus fruit that a farmer might happen to have, and which he could not profitably dispose of as fresh fruit. All the arrangements at factories are made well beforehand, by regular contract, and though in the case of a short crop, it may occasionally happen that a factory would be obliged to give a higher price than the farmer could get for his fruit if fresh, this must not be depended upon, and the probability is that when the farmer has a surplus, the factory will not want any of the fruit. So, too, is it with vegetables. Contracts are regularly

made beforehand for the produce of so many acres in this or that crop. In brief, the farmer who wishes in this way to dispose of his surplus by sale must either contract beforehand with a factory, or else exercise great care in selecting his fruit, and in employing the best method of drying it; otherwise he must be content with an inferior price. When, however, the question is one not so much of direct sale in competition with factory and imported produce, but is one of the utilisation of what would otherwise be quite wasted, or where home consumption alone is intended, then this care in selection is not called for, and even fallen fruit may be quite well utilised, for, though it would fetch no price in the market, it would still be perfectly good and useful for home consumption. It is clear, moreover, that in a factory an approach to uniformity in size is a necessity to economy in the working of the various processes of peeling, coring, slicing, &c., whereas on the farm this is not a matter of so much moment.

PACKING AND STORING.

After fruit or vegetables have been dried they ought to be left exposed to the air for six or seven days in a dry, well-ventilated room. If put away in boxes at once after drying, they are apt to become mouldy. They need watching from time to time while in the store-room, and any bad fruit, &c., must be removed, or that which turns mouldy must be further dried in the oven. After this, the produce may be packed in wooden boxes, bottles, &c., and will keep perfectly well, though not excluded from the air.

PREPARATIONS FOR USE.

When required for use, the dried fruit or vegetables merely require soaking in warm water for four to six hours, according to the nature of the material. After the soaking, they are cooked just as one would cook fresh fruit or vegetables. Apples should be cooked in the same water as that in which they are soaked. Vegetables, when required for soups, need no preliminary soaking, but are put in the broth direct, long enough beforehand to ensure their becoming tender.

In Germany a great deal is done in the way of compressing the dried vegetables to a small bulk for army, navy and transport purposes, and not vegetables alone are so used, but also meat of different kinds is compounded with them, and the whole made up into a kind of compressed sausage. It is reckoned that 1½ oz. of dried vegetables will make a good dish for one person.

I found that even in Germany the best Californian "apple rings" competed successfully with the German factory-made produce, and there is still a general idea that American apples, Italian plums, &c., are superior to the home-grown. Nor could I ascertain that, as yet, any of the farm-dried fruit finds its way into the actual markets and shops of the large towns of Germany. But, even there, fruit-drying is quite in its infancy, though there is a firm belief among those best qualified to judge that there is great room for improvement and development, and the introduction of simple and inexpensive machines like the Geisenheim ones will doubtless greatly foster it. In Frankfurt and some other towns co-operative societies (*Genossenschaften*) have lately been started for the collection and sale of fruit, through a system of sorting, and it is intended to take up the question of the disposal of home-dried fruit also. Among the well-to-do classes in Germany the use of "bottled" or "preserved" fruit takes in great measure the place of dried fruit, though the former costs considerably more. There are a great many factories employed in making these bottled fruits. Cider-making, it is well known, is a great industry in Germany, and, where apples are largely grown, what is not sold as fresh fruit is converted into cider. In some parts, indeed, so great is the demand for cider, that, in a year of short crop, apples are brought often from long distances to make up the supply. This militates also against the spread of fruit-drying.

LETTERS TO THE EDITOR.

ANSWERS TO CORRESPONDENTS.

["HERMIT." Declined with thanks. "WYNAAD RHEA." Your letter mislaid. Write again, please.—ED.]

LIME: SLAKED OR UNSLAKED?

SIR,—I had a conversation the other day with a planter about lime. He advocated the application unslaked. I have

PROCELE & ASTHMA. Instant relief! Permanent cure guaranteed or the Price (Rs. 5) refunded. Don't despair, even if in the last stages. Apply to—MANAGER, V. C. WORKS, Ranaghat, Bengal.

always applied it slaked. Another planter always buys shell lime from Calicut and slakes it on delivery before application. I have always bought it from Gudalur near Mettupalaiyam, sometimes it arrives slaked and sometimes unslaked, and the seller slakes before delivering.

NILGIRI PLANTER.

SNAKES ON THE HILLS.

SIR,—Will Mr. Daly kindly tell me if the true *Tic polonga* is to be found on the Nilgiris? A friend, a planter, told me recently that he knows of two cases where this snake was seen on these Hills at an elevation, perhaps, of 4,500 feet. In the last case the witness, a syce, stated that as he was leading the horse down the estate road, he was startled by a curious thick snake rolling down the bank, wriggling across the road and then again rolling down the hill below the road. The breadth of the snake was said to be almost as great as its length. Is this the *Tic polonga*?

There is another venomous snake, common at even 5,500 feet, called the *Katty veriun* in Tamil, about 18 inches long, retractile (?) poison fangs, triangular head, barred back (black and brown), whitish pinkish belly. Very sluggish in its habits.

K. V.

STATISTICS: MEANINGLESS SCRUPLES ON.

SIR,—In your issue of the 6th instant, under the heading "The Ceylon name," page 104, you say:—

"... South India is still comparatively unknown at home, and the vastness of its planting industries is minimized by the way in which the various districts are scattered. There is no doubt we want a lot more advertisement than we get, and if we cannot get others to do it for us, we had better take a wrinkle from Ceylon and do it ourselves."

Certainly; and one of the wrinkles to be taken is the rendering of the full statistics of the Districts, called for by the U. P. A. S. I., to be included in its Annual Book of Proceedings. Ceylon planters have done this for something like 40 years. How can we better advertise the vastness of our planting industries? How can we better bring together our Districts which, as you say, are scattered? And yet one, if not two, of our important Districts regards the call for statistics as inquisitorial.

L.

11th February 1897.

[We perfectly agree with you. If planters themselves refuse to help in the work owing to incomprehensible scruples, what can be done?—Ed.]

THE IMPERIAL BUSHEL.

I.

SIR,—Allow me just very briefly to point out to "Imperial Bushel" that the only true and correct bushel measure is that bearing the Government (home) stamp and are known as Government Stamped Imperial Bushel Measures. If these be used by planter and curer alike, there are only two causes to which short deliveries of crop can be attributed to, and they are:

- (1) Pilfering by contractor or bandyman.
- (2) Dryage during transit.

I. G. F.

II.

SIR,—Re the above in your issue of 6th February, the fault of short measure between estate and curers lies more in the way the bushel is "fed" than anything else, I think.

I have lost 20 bushels this year between estate and "works." Curers write to say "bags in good order, not tampered with," etc., etc.

They go on to say "they have not time" to feed the bush quickly but fill "sharp." Let your correspondent try and fill his bushels with a steady flow of coffee from the basket in bushels and then turn it out and "dump" it sharp as they at the curers, and he will find that in 100 bushels he will count out 4 or 5 short.

I certainly think the "curers" should employ more haste to measure when there is a rush of coffee and not hurry through.

ANON.

III.

DEAR SIR,—Your correspondent "Imperial Bushel" is evidently very ignorant regarding his own history—how his existence is at all justified—and that it is H. M. the Queen and Empress of India who has the stamp of respectability and honesty placed on him. I will therefore give him a few facts connected with the Imperial Bushel Measure as made in London, where it must, in accordance with the Weights and Measures Act, be tested and stamped by competent authority before it can be legally used: and it must contain exactly 2,218.192 cubic inches, whatever its form may be.

In connection with the bushel, we have the striker sweeping off the superfluous coffee above the edge of the bushel, which according to the aforesaid Weights and Measures Act is to be of light wood and 2 inches in diameter: this is an important adjunct to the bushel, and can be used fairly and honestly, or the reverse. I have seen bushels struck in a peculiar way and with strange and wonderful strikers, flat "anyhow," and not according to the Act.

I would, however, point out to I. B. that the mere possession of a London tested bushel will not insure accurate measurement of coffee. Contractors well know how (if permitted) to get full measure on the estates and to deliver short measure to the curing yards. Measurement from Hoppers of a standard pattern stops pilfering in that line: but it gives some extra trouble in measuring coffee, and has to a very great extent been given up by growers, which is to be regretted.

To test bushels accurately is a very difficult matter without having special appliances for the purpose: but I. B. may be satisfied the bushels which bear the City of London stamp (if uninjured) absolutely correct. Bushels are by no means indestructible, in fact have short lives, and should be specially cared for: how I. B.'s curers, from using a new Imperial stamped bushel, could have made the parchment to which they refers run short is hard to understand: he has apparently more faith in his contractor than in his stamped bushel and cure. The contractor has no doubt many risks to run, and is to a great extent at the mercy of cartmen and thieves on solitary roads which his carts pass over at night; but at present time they are, all round, and in the hands of experienced, strict but just employers, a most useful and hard-working body of men. I can only advise your correspondent to consult some experienced neighbours *re* how to secure his crop from theft, for he is certainly in the wrong track when he blames the Standard Imperial Bushel for his losses.

[The signature is a copy of the stamp impressed on the Imperial Bushel, and is somewhat as follows:—Ed.]

Crown (very rough pattern)
Imperial V. Q. R. Standard
Double shield
with
cross in centre.

IV.

SIR,—The following notes on this subject may explain some of the points raised by your correspondent "Imperial Bushel" in your impression of the 6th instant:—

KALLAI WORKS, CALICUT.

ARBUTHNOT & CO.'S SPECIAL MANURE FACTORY.
MANURE SEASON 1896-97.

Fish Guano.—A Speciality. Specially prepared and manufactured from Fresh Fish in new patent machinery and under a new process.

Bone Meal.—Finest Powder. Medium or Coarse—Castor, Ground Nut, Hoongay, Neem and other Poonacs—flour milled.

Richy Phosphates.—90% guaranteed to pass through sieve, 1,000 meshes to square inch.

Un-dried Fish.—Either whole or milled, guaranteed free of sand.

Superphosphates.—Nitrate of Soda, Sulphated Salt, Muriate and Nitrate of Potash, Basic Slag and other imported manures. Quotations will be obtained as early as possible.

MANURES MIXED IN ANY PROPORTION FREE OF CHARGE.

Coir Matting of every description, from the finest quality Twill to Common Estate Shade Matting. Prices from Rs. 15 to Rs. 1-8 per roll of 6 ft. by 3 ft.

Quotations and further particulars will be furnished by our Mallicherry and Mangalore Agents for delivery at their ports, and by the undersigned.

D. N. MORISON,
MANAGER, KALLAI WORKS.

Planters' Library.

Please note that purchasers will effect a saving by sending a M. O. or stamps for the price of the books, plus one anna on the rupee for packing. The value payable commission and registration fees will be saved, while the postage being charged bearing (at the same rates as if prepaid) will ensure safe delivery.

The Wynaad and the Planting

Industry of South India ...By "Francis Ford," Re. 1.

	Rs.	A.	P.
Book-keeping for Planters	...	1	12 0
Coffee: Ceylon Coffee, Soils and Manures, Hughes	...	3	8 0
" Brazil as a Coffee Country	...	1	8 0
" Grab, Haldane	...	1	8 0
" Cultivation in Ceylon	...	0	4 0
" and Chicory	...	1	12 0
" Planters' Manual, Brown	...	3	12 0
" and its Enemies, Nictner revised by Green	...	1	4 0
" in South India, Arnold	...	7	8 0
" in Mysore, Elliot	...	7	8 0
" by Locke	...	12	8 0
" by Laborie, Planters' Manual	...	2	0 0
Cinchona Planters' Manual, Owen	...	4	0 0
" Cultivation, T. Christie	...	1	4 0
Cocoa, Cultivation in Ceylon	...	0	6 0
" Planting in Ceylon	...	0	8 0
" by Bidie	...	0	8 0
" by Hart, illustrated	...	4	12 0
Cardamoms, by T. C. Owen	...	1	0 0
Cotton in Ceylon, Hon. W. Mitchell	...	0	8 0
Chemical Analyses, Ceylon Manual, Cochrane	...	3	8 0
Crops, How Crops Grow, Johnson	...	10	0 0
" How Crops feed	...	10	0 0
Ceylon in the fifties and and eighties	...	1	8 0
Elements of Agriculture, Fream	...	3	8 0
Estate Buildings (Ceylon P. A. Prize Essay), illustrated	...	5	0 0
Forage Plants, and their economical conservation	...	0	12 0
Gardening in Ceylon, W. Cameron	...	1	8 0
India Rubber and Gutta Percha, All about	...	2	2 0
Liming, importance of	...	0	4 0
Planters' Note Book or Molesworth	...	3	8 0
Palmyra Palm	...	2	0 0
Plantains or Bananas	...	0	8 0
Pruning, Desbars' Tree	...	1	8 0
Manures, Harris' Talles on	...	6	12 0
" Lawes' Compensation of unexhausted	...	1	0 0
" Munro's Soils and	...	2	3 0
Ramie, all about Aloe and Ramie	...	1	5 0
Spices, all about	...	3	12 0
Tobacco, all about	...	3	8 0
Tobacco, by Locke	...	7	8 0
Tea by Bamber	...	4	0 0
" Industry in Ceylon in 1886	...	0	12 0
" Cult. and Manuf. by Hay	...	0	4 0
" Cult. in Ceylon	...	0	6 0
" at High Elevations in Ceylon	...	0	3 0
" Young T. Planters' Companion	...	4	8 0
" Nilgiri Tea Planter, McPherson	...	1	0 0
" Planting in India	...	0	12 0

P.S.—Any books required, not in the above list, we shall do our best to procure and forward by Value Payable Post only.

"Englishman," August 1st, 1896

APPRECIATION OF AN INDIAN MIXTURE

Messrs. CHILD & CO.,

The Wholesale Tobacconists of Chowringhee, are in possession of an autograph letter from Mark Twain.

"Indian Daily News," August 1st, 1896

Mark Twain left a substantial memento of his visit here to him in Calcutta in the shape of a letter addressed to Messrs. Child & Co., and an old Mississippi pilot knows what good tobacco is, even when he takes to literature.

MARK TWAIN.

Calcutta, February 8th, 1896

MESSRS. CHILD & CO.

SIRS,—This is the brand I wanted. I have smoked your Honey Dew Mixed in another part of the world, and learned to prefer it.

Truly yours,

S. L. CLEMENS

CHILD & CO.'S HONEY DEW MIXTURE

Is prepared from the four finest growths in the world, viz:—

Sun-dried Virginia (sweet and mellow), Old Kentucky (flavoured), Turkey Dubec (mild), Latakia (fragrant). All fully matured in bond, and judiciously blended.

It is a faultless Pipe Tobacco, being of medium strength

WITH DELICIOUS FLAVOUR.

THE FINEST THAT CAN BE MADE. NO EQUAL

In $\frac{1}{4}$ lb. air-tight tins, Rs. 2-8 per lb.

CHILD & CO.,

WHOLESALE AND RETAIL TOBACCONISTS,

MESS AND CLUB CONTRACTORS

2-22, 2-23, CHOWRINGHEE ROAD, CALCUTTA

GENERAL PRICE LIST ON APPLICATION.

"PLANTING OPINION," COONOR.

22nd November 1895.

The Imperial Bushel equals 2218.19 c. in.
 Estate bushel $13\frac{7}{8} \times 15\frac{1}{4}$ deep. 2305.00 „ „
 A box 14 inches square & 12 deep = 2352.00 „ „
 Coffee sent down by Estate bushel generally
 measures out correctly at Coimbatore. It is a zinc cylinder
 weighing about 18 Rupees and is supposed to be the correct
 measure.

We have found this year that 27 bushels of coffee in 5 days
 of drying came down to $24\frac{7}{8}$, a loss of $2\frac{1}{8}$.
 The Badagas this year, I understand, are careful to dry for a
 whole day only so as not to lose in measure, but purchasers
 have been driven to buy only on a guarantee of 100 bushels to
 a ton as the result of this among other reasons.
 When coffee fresh from pulper is examined, all the beans look
 good but there is a large percentage of light empty shells that
 burst after three or four days sunning and the quantity is thus
 reduced. If this bursting is not allowed to take place on the
 estate, it does to a certain extent *en route* with the result that
 the measure is short.

As to differences in size of bushels or rather capacity: the
 Imperial zinc bushel sold by firms must gradually expand from
 time to time and use, the most visible sign being a bulged bottom.
 A Winchester wooden bushel, with iron bands is a more
 reliable machine, but this too is capable of enlargement from use.
 The purchase of a new bushel should not lessen the despatch,
 pointed out by your correspondent, but tend to increase it.
 I will close by stating that it is impossible to measure a
 bushel of coffee twice alike in a dozen times, as I have proven
 in actual trial. One little rap makes a great difference.

RED SPIDER.

THE COFFEE CAMPAIGN.

I.

SIR,—Your correspondent “Cup of Coffee” (*Planting Opinion* of
 6) calls attention to the great importance of pushing the sale
 of Indian coffees and to the decrease of the consumption of
 coffee in Great Britain. Permit me to offer some remarks on both
 these points.

As to the first, I believe that much may be effected by private
 effort, and as one practical illustration is worth a score of
 general assertions, I may give the following. A great many
 years ago circumstances, which I need not enter into, brought me
 in contact with the late head of Messrs. Lyle & Co.’s shop in New
 Street, and I then asked him to go into the market
 and buy the very best coffee he could find, as I was confident he
 would not fail to profit by so doing. Well, fortunately for
 myself, he took my advice, and every time I called at his shop, I
 found that his business was increasing. He got Club after
 Club in London on his books, and long ago his sales doubled, and
 are still steadily increasing, and when I call at the shop I
 am shown a book which records the sales each year. I may also
 mention that, finding the firm was inclined to encourage the sale
 of the best coffee, I recommended people to patronise the shop.
 I looked into the quantity of coffee returned by the roasters,
 and found that 92lb. only were returned per 112lb. of green coffee,
 whereas a larger weight should have been given. This led to
 constraints on the part of the firm, and from the increased
 weight now giving, a saving of upwards of £300 a year has been
 effected. It may be interesting to mention that the present
 manager has received a number of letters, many of them from
 eminent persons like the late Lord Tennyson, complimenting
 the firm on the excellency of the coffee supplied. From my
 experience then, as illustrated by the above-mentioned facts,
 I am sure that planters have the power, if they choose to take

a little personal trouble, of pushing on the sale of good coffee.
 Let me give another illustration.

A friend of mine—a Mysore planter—obtained a medal for his
 coffee at the Chicago Exhibition, and, on my recommendation, sent
 a trial parcel of his coffee direct to New York—part of a lot
 the rest of which was sent to London. The result was that
 the coffee netted £4 10s. a ton more than the lot sent to
 London, and I have reason to think that more would have been
 obtained had it not been for the adhering silver skin, which is
 a distinctive characteristic of Mysore coffee, but which the
 New York people complained of, as the coffee they were
 accustomed to is free from silver skin. Another Mysore
 planter sent some of his coffee to Australia and found that he
 was a gainer from having done so. These illustrations tend to
 show that we do not sufficiently distribute our coffee throughout
 the world. The tendency is to crowd it on to one market, and
 at one time, and hence we do not, I have every reason to
 believe, get nearly as good prices as we might.

As regards our fine Indian coffee, I do not think that much
 good could be derived from teaching people how to make coffee.
 The upper classes who use our coffee soon find out how to make
 the most of it, and if the lower classes did know how to make it,
 the fact would not allure them from cheap tea which, I need
 hardly say, affords a much less expensive beverage. The
 total consumption of coffee has declined in England, but there
 is no reason to suppose that the use of fine grade coffee has
 declined.

Much might be done to push the sale of coffee in India
 through the agency of the Co-operative Society in Bombay, which,
 I found on inquiry, now sells a good deal of coffee which is
 roasted, and ground, and tinned, in England. I have been informed
 on good authority that 75 per cent. of our troops in India
 would prefer coffee to tea if they could buy the former roasted,
 and something might surely be done here by a firm, like that
 of Spencer & Co., of Bangalore, to supply the Commissariat.

The tea planter follows up his produce to the markets of the
 world and pushes its sale. The coffee planters do not, and they
 suffer accordingly.

I may mention that the coffee consigned to New York was
 sent to Messrs. Dadabhoy & Co., Commission Merchants, London,
 Aden, Bombay and New York and Madagascar. I may add
 that, from the facts given in my letter, and other facts which
 have been brought to my notice, it would be of great importance
 to open out a direct trade in coffee to New York as the Americans
 are fond of good coffee, and as we have seen are prepared
 to give good prices for it. I may also add that a very short
 time after the sales of Mysore coffee have taken place in London,
 much of the coffee is resold at higher prices than we obtain for
 it.

BARTCHINHULLA, HANBAL, }
 HASSAN DISTRICT, }
 MYSORE STATE, }
 February 13th, 1897.

B. H. E.

II.

SIR,—I hope the letter of your correspondent “Cup of
 Coffee,” in your issue of the 6th instant, will lead to some
 discussion and awaken Planters to the gravity of the situation
 caused by the decrease of consumption of coffee in Great
 Britain. The question is a most serious one, and undoubtedly
 will lead to a fall in the value of our produce unless some
 energetic action is taken to promote consumption. Planters
 have been so accustomed for several years to good prices that
 they seem to think they will last for ever, but is this likely to
 be the case with the increase of production going on all over

the world with no corresponding increase of consumption? Already has the Brazilian article declined in price fully one-third, and I apprehend it is only the abnormal shortness of crops in S. India this season that has maintained the value of our coffee. With the improved method of curing that is likely to be introduced into Brazil, the wide difference in quality is likely to be reduced, and with a larger yield of coloury kinds from that and other countries at cheaper prices, Indian sorts will be likely to be in less demand.

The causes of the decrease of consumption are several, one being the great activity of the Indian and Ceylon Tea Association who are forcing their cheap teas on the public, and which has probably resulted in turning many coffee drinkers into tea drinkers, (you may be sure that for every extra cup of tea drunk, one less will be drunk of coffee,) and be it remembered it is not simply in England that they are pushing their sales, but that they are now attacking the great coffee drinking countries, notably the United States and Germany, and should they meet with a tithe of their success there, we shall indeed have a severe blow to the coffee interest.

Another cause is the large adulteration of coffee now practised and which is responsible for much of the decrease of pure coffee consumption. Two different factories at Cologne are said to undertake to furnish the machinery for making false coffee bean out of the roasted meal of different cereals worked up with dextrine, each machine being capable of turning out $\frac{1}{2}$ a ton daily at a cost of £1 per cwt. If adulteration could be put a stop to, we should soon see a large increase in consumption, as pure coffee would then occupy the space now filled by the adulterants, and the result would be, with the same consumption, a large increase in pure coffee. Brazil has a great advantage over us in that their currency is on a silver basis, whereas ours is propped up by the short-sighted policy of closing the mints, maintaining the rupee at a fairly artificial value which actually amounts to a tax of about 25 per cent. on our produce. The milreis is the Brazilian equivalent for the rupee, and at their rate of exchange is worth about 9d. A great injustice has been done to all Indian producers by the closing of the mints and giving the honest money of the country an artificial value in the interest of the few. Certainly the hardship on the masses in this time of famine must be great owing to the depreciation in the value of their silver ornaments compared with the rupee.

The coffee planters of South India should in their own interest form an Association to push the sale of coffee in England to start with, and fight against adulteration, and raise a fund for this purpose from an acreage tax. As I understand this question is to be brought forward at the next annual meeting of the U. P. A. S. I., I hope all District Associations will give the subject their earnest consideration.

PUSH THE COFFEE CUP.

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma contains per ton:—

61-50	lbs.	Nitrogen.
57-38	"	Potash.
14-92	"	Lime.
13-63	"	Phosphoric acid.

Orders booked for the coming crop of seed from the parent trees of above analysis at Rs. 3 per 1,000.

Manager, ARIENKOW ESTATE,
SHENCOTTAH,
Tinnevely.

COFFEE.

Indigenous seed from Africa.

African Planter. The plant was discovered in the Ch district of British Central Africa by Mr. George Adams. The seed is very tiny, about the size of gram, and it is evident that unless it crops very profusely indeed, it is commercially, valueless. We have distributed the whole of the seed among the Madras Agri-Horticultural Society, Bangalore Lal Bagh, the Nilgiri Government Experiment Gardens at Burliar, the Nilgiri Agri-Horticultural Society and among certain planters in Coonoor, Kotagiri, Gudalur on the Nilgiris, and to Shencottah, Travancore. A dried specimen of the flower and leaf has been sent for identification.

Consumption of coffee in America.

There is no need for the "Coffee Pot Campaign" to extend its work to America, for the consumption of the fragrant berry seems as steadily increasing in this country as it is declining in England, the amount per capita being as much as 9 lb. in America as compared with 1 lb. in England.

Liberian in the Straits.

In Perak the custom is to plant out the Liberian very far apart, only about 400 trees going to the acre. Topping is variously done at 6, 10 and 12 feet. Unmanured yields from large acreages are stated to be excellent, a case being given of some 250 acres in full bearing, 7 to 8 years old, giving $5\frac{1}{2}$ cwts. of clean coffee per acre.

BEES AND THE COFFEE BLOSSOM.

(By our original Correspondent.)

I AM afraid your correspondent H. G. R. in the last issue of the 6th inst., has made a great deal of what he must have seen were only rough notes in reply to some questions. I reply to your correspondent.

If there are cliffs within a reasonable distance of a coffee estate, there is a possibility of the hive of the rock being there. It is a well-known fact that bees go great distances for honey. When the coffee blossom is out, it would continually be visited by these bees. I did not think any of your readers would imagine that I meant the bees would get honey from the rocks, so I repeat that there might be a great scarceness of flowers, still the possibility of there being a place for bees to hive would in all probability bring them there, i.e., to the cliffs. I trust my explanation is satisfactory to H. G. R. With regard to the large numbers of bee hives that were on the tree, it is not possible that the bees were, for some reason unknown to themselves, in the habit of visiting this place years before there was any coffee in the district. One year here there were hundreds of hives of the

on all the trees about; there was not any particular tree plant in flower (such as the *Strobilanthes*). The bees fed for about three months, yet not a single piece of was made. Now what did these bees come for? they, as human beings often do, take a change? The question is an interesting one.

The quotation from Hooker by H. G. R. does not, I think, effectually dispose of my remarks about the fertilization of the coffee blossom; there are other authorities, and one I intend quoting is a more practical one than H. G. R.'s. It is from a work called Cassell's Popular Gardening, and is edited by T. D. Fish, assisted by many artists, curators of public gardens such as Kew, and head gardeners. In this work will be found much information gathered by experiments and from experience. I think the faith is to be placed in this than in a statement which lies generally. You will note that H. G. R.'s para. says "as a rule," and I quite allow that "as a rule" cross fertilization is the most successful, but I do not think that coffee is invariably cross fertilized. I may mention that though I have seen and examined coffee blossom, I am not a coffee planter (or a scientist as you, Mr. Editor, were good enough to "dub" me) and consequently have not had a proper or good opportunity of watching the fertilization of the flower, but I trust that H. G. R. (and may be a 100 ton blossom to watch) will do so and let us have his notes on the subject.

On page 189, Vol. III. of the work above mentioned, is the following information:—

While the general rule is as we have endeavoured to explain it, (*i.e.*, concerning the cross fertilization of flowers), must not be supposed that it is invariable. On the contrary, a flower that is habitually cross fertilized may become close fertilized (*N.B.*—I used the word *self-fertilized*), a flower that is usually protandrous (*i.e.*, the anthers expand first) may become protogynous (stigma ready before its pollen) and *vice versa*, or both stamens and stigma may be ripe at the same moment. Hence there is a possibility in any given flower of much variation in the method of fertilization, and the plan followed in one flower of the same plant is not necessarily the same as that which obtains in another. Such facts as these furnish one explanation of the cause of the variations that we see in plants, whether wild or cultivated, and it is obvious that they require to be very carefully considered by the hybridiser or raiser of seedlings. *If he require to secure a 'pure strain' or a 'pure stock,' he will, or should, study the habits and peculiarities of the flowers, and take every pains to prevent cross-fertilization. If, on the other hand, his desire be to raise new varieties, then guided by the same facts, he will practise cross-fertilization.*"

I think, after reading the above para. carefully, H. G. R. will agree with me that I am right in concluding coffee blossom is close-fertilized. Does coffee not come up very true to seed? How often are there *varieties*? And even with these *varieties*, do they not 99 times out of 100 come true to seed. By variety, I need not say I mean variety in its proper sense, not hybrid.

TEA.

NEW MACHINERY.

THERE scarcely seems a fortnight now without the announcement of some new and ingenious device to smooth the way of the tea-maker and to heighten the excellence of his product. Weather and climate are great factors still in the field, and, until a very short time ago, in the factory also. Now it is otherwise. The variations in moisture and temperature that used to be such a constant source of annoyance to the planter, interfering with his wither, and consequently with his plucking, spoiling his fermentation perhaps altogether, need no longer be seriously considered. Machines are on the market that have been satisfactorily proved to control the wither and fermentation to scientific exactitude. The "Witherer" we are alluding to is manufactured by Messrs. Davidson & Co., of "Sirocco" fame, and the work it claims to do is simply wonderful. As a representative of the firm pointed out in a late interview at our office, the saving in buildings alone will be enormous, owing to the absolute superfluity of the hitherto inevitably huge withering lofts and sheds, with expensive adjuncts of racks, fans and air-tight roofs. For the machine under notice, while capable of withering 3,200 lbs. of green leaf (wet or dry) per day of ten hours, only occupies a floor space of 25 x 20 ft. It is interesting to note the processes by which this result is attained. The leaf to be withered is thrown in a drum, the drum is driven by a small engine affixed to the witherer, which also drives a fan which impels a current of warm moist air through the leaf. The heat is furnished by the waste steam of the engine itself. When the leaf is sufficiently withered, which can be ascertained without stopping the machinery, it is discharged automatically. At this stage the leaf is of a light fermented colour and almost partially rolled, owing to the constant rolling motion it has undergone. It is curious to note that this process, the latest development of modern machinery, is substantially a return to the ancient Chinese practice of tossing and patting the leaf by hand. From the witherer it should go direct to the roller. The machine is thus entirely self-contained; it costs f. o. b. at Birkenhead £275. It will be noted that, apart from the actual savings in withering lofts and racks, that manufacture can be regulated to a nicety, and the rolling commences at stated hours every day.

The new roller Messrs. Davidson & Co. have brought out is in its way as great a novelty as their witherer, the fill being 350lbs. and the power only 2 H.P. The principle adopted is entirely a new one. The box or container is stationary, while the rolling table, which is fitted up with peculiar wedges or ploughs, stirs up the leaf something in the fashion of a churn, hard to describe but easy to understand once the process has been observed. A very light yet well-twisted roll is given, and so thorough is the manipulation, pressure by weights, &c., is entirely obviated. When we consider that the "Little Giant," with its 80 lb. fill, takes the same power to drive it as does Messrs. Davidson & Co.'s with its 350lb. fill, and that the price of

the latter is only £125 f. o. b. Birkenhead, the relative advantages of the machines are manifest.

The next article is the "Oxidiser," which takes charge of the rolled leaf, and by an ingenious arrangement of tatties and fans keeps the temperature down to any desired point. Messrs. Davidson & Co.'s machine is not, however, on the market. A description of Mr. Nathan Sharpe's "Simplex" cool oxidiser will be found highly interesting. This last we take from the *I. P. G.* :—

"It is well known that cool oxydisation gives the best results. At present, oxydisation occupies various periods of time, according to atmospheric and other conditions; it is hoped that the 'Simplex' Cool Oxidiser will facilitate regular time, and, most important of all, a perfect coloring of the leaf.

"The machine consists of a series of racks, upon which the trays filled with the tea leaf are placed, a tank at top of machine is kept full of water, and this water is fed by means of perforated pipes, in small sprays, down the incline boards, on to the (fermenting) cloth ends and sides of the machine, which are thereby automatically saturated, thus forming a saturated cloth chamber, in which the leaf is placed.

"For the effectual cooling of the air and reducing of temperature, two volume fans play on to the saturated cloth curtains at the ends of the machine, and the air thus forced into the leaf chamber is effectually cooled by its displacement and contact with the saturated cloth.

"On the desired colour of the leaf being attained, the water is turned off (by the regulator taps), the fans stopped, and the saturated curtains, at the sides of the machine, pulled on one side. The trays being withdrawn, emptied and recharged, the curtains are again closed up, the water turned on, and the fans started.

"Some idea of the cooling capacity of this Cool Oxidiser can be imagined by the fact that the two 42in. air propellers pass 26,000 to 30,000 cubic feet of air through the machine per minute, and without in any way disturbing the leaf.

"The Large size Cool Oxidiser, of 144 trays, contains 864 square feet of leaf surface, and will take 36 rolls of leaf, approximately, at a charge. £175 complete.

"The Chota Cool Oxidiser, of 96 trays, containing 576 square feet of leaf surface, will take about 24 rolls of leaf, approximately, at a charge. £140 complete.

"The price of the large, size 'Simplex' Cool Oxidiser, complete, is £175, or without trays £135. Packing and delivery f.o.b. London £10. The Chota 'Simplex' Cool Oxidiser, complete, £140, or without trays £116. Packing and delivery f.o.b. London £8.

"Four are already on their way out, and will be erected and worked immediately the new season's work commences."

Lastly, come Davidson's automatic endless web sirocco tea-drier, a full description of which was published in our issue of 19th December 1896. Briefly, it turns out about 320lbs. made tea per hour, and is absolutely automatic in its action. The wet roll is placed on the top web, and the exceedingly high temperature to which it is submitted instantaneously arrests fermentation. The passage of the tea along this web can be regulated in speed. At the end of the web the tea drops on to another web at a lower temperature, and so on until it emerges cool and perfectly dry at the other end.

Competition being an excellent thing, we are glad to see Mr. Nathan Sharpe's name figuring so largely in tea-machinery; in fact, he promises soon to be able to rival Messrs. Davidson & Co.'s present unique position of being able to turn out a complete outfit of machinery from start to finish.

To owners of small factories, who must perforce sigh in vain for the large-size expensive new machines above des-

cribed, we are glad to announce several distinct improvements in the working of those popular and excellent dryers, the old up-draft siroccos. Of packers, sorters, sifters, etc., there are no end, but for detailed description cannot find the space just now.

We cannot conclude without a brief mention of the thing in oil engines, Tangyes' patent, which seems about neat and compact a little machine as anyone could wish. Especially does it seem suitable for small factories, being simple construction and easily managed. We may remember here that though hand-driven rollers turn out work nearly as cheap in factories, reckoning interest on outlay of engine, there is a very great difference in the *quality* of the work which must mean, in the long run, pence per pound.

Big yields.

One thousand and thirty-pounds of made tea per acre on 300 acres, without the aid of any manure, is the yield of Utenwella Estate, Matale West, Ceylon. We shall be disappointed if the Wynaad in a very few years cannot show this figure, excellent though it is. We believe a certain Dooars garden holds the record in the way of big yields, the average per acre being some 1,200lb. odd.

Richmond prices.

Mr. Atzenwiler asks us to correct an error that appeared in our number concerning the price realised by Richmond estate teas in the London market. The average, as given by Messrs. Gow, Wilson and Stanton's circular, reproduced by us, was stated to be 6½d. This is wrong, it should have been a little over 7d. per lb. The mistake, which we regret, is doubtless due to the methods adopted by the above firm of brokers in calculating the chests and packages on uniform weight.

The plague and the Continental trade.

Encouraging this, for direct porters to the Continent! Says *Calcutta I. P. G.* :—

"A firm in this city which has been doing a considerable business in Germany received a letter by the last mail from Berlin requesting that no more tea be sent at present. The samples which were sent had all been fumigated, and had suffered in the process. No tea from India will be admitted into Germany without being fumigated. Fumigation simply means spoliation; in other words, Indian tea trade with Germany is at a standstill. If the plague breaks out in Calcutta, the mere fact of its existence in this city will spell ruin to the tea trade. Are we prepared for this possible contingency?"

The Travancore Tea Plantations Company.

The good effects of the introduction of "company capital" are clearly demonstrated in Ceylon, and we are glad to note in an exchange that the Travancore Tea Plantations Company is being formed to take over the properties in the Peermaad District of Travancore belonging to Messrs. Wm. Mackenzie and H. M. Knight, together with certain lands recently purchased from Government. The properties consist of the Bon Ami and Glen Head estates, the former having 409 acres under tea, and

er some 100 acres. The Directors of the new Company be all the Directors of the Ceylon Tea Plantations Company, Limited, with Mr. Wm. Mackenzie added. The final capital of the Company is to be £150,000 sterling, the present issue will consist of £60,000.

American statistics.

The *American Grocer* gives some very interesting figures on the tea trade in America, showing very clearly the gradual increase in imports, with a stationary or lessening *per capita* consumption, and a steadily declining average *and total* money value. In an interesting interview with Mr. Mackenzie, *Times of Ceylon* correspondent says:—

Turning to figures, Mr. Mackenzie once more referred to the Americans as a coffee-drinking people, consuming 9 lbs. per head against 1 lb. per head in England. There would be a further rise in 1896 in British-grown teas imported, but exact figures could not be given for the year until February. Tea was lumped together by the Customs, and the quantities from the various countries were separately shown. They knew, however, that the total of all teas would be less, and they therefore knew that China and Japan black teas had suffered from the competition. Considering the small portion of black tea consumed in the United States—only 100,000 lbs. against 85,000,000 lbs. of green tea—it would be seen that a large proportion of that portion of the market had been captured by India and Ceylon with their 9,000,000 lbs. imported in the current year.

and advice.

In one of the recent issues of the *Calcutta Planter*, we notice some sound and practical advice given on the management of a garden. It treats on the mixed question of making good crops and making the garden pay. For these two things are by no means identical. A man may make excellent crops, and yet the profit per acre may be a great deal less than that off another garden where the prices are a great deal lower. Suppose a man takes charge of a garden that doesn't pay. Let him first look to the factory and see that everything is all square there before he tackles the cultivation. Let him note what his nearest "paying" neighbours are doing, and compare the differences of methods in the two concerns. Once the make of tea is satisfactory, and building accommodation and machinery up to date, let him turn to the field and make things "hum" there. Above all, let him study the cost of each branch of expenditure, before he launches into any expenditure. It may very well be that he can find he can make tenpenny tea with ease, and that the profit per acre runs out to less than 8d. tea. He should have every detail of cost at his finger's end. If he goes in for coarser plucking, he will probably need more labour and more withering accommodation, that is to say the cost per acre will be increased. Will the extra yield at reduced prices cover this? He may feel inclined to pick the other. Will the higher prices and slightly lower cost per acre make up for the deficiency in crop?

Theory is excellent, but every theory should have a practical application capable of being tested in rupees, annas and pies. A planter should know his estate books by heart. Account keeping has a value second to no other branch of estate-work, provided one thing: common sense to profit by the lessons it teaches.

The London Market.

Although the quantity of Indian tea, says the *Produce Markets Review*, referring to last week's tea sales, January 29th, brought forward has exceeded that of the previous week by about 3,000 packages—Monday's sale alone comprising 39,500, being the largest quantity ever offered in one day—prices show no change of importance. The proportion of the finer descriptions was much larger than for some time past, but, the demand being equal to the increased supply, prices were well supported, and nearly the whole changed hands. Many buyers are, no doubt, securing these grades in advance of their requirements in the anticipation that future imports will not be up to the standard of those now offering, which are certainly better generally than those placed on the market since the early arrivals. The medium kinds, of which there has been a good supply, have also been readily bought at last week's rates, and although prices appear somewhat higher than they were before Christmas, these teas are intrinsically as good value as at any period this season, owing to their better quality and greater strength. As the balance of the season's crop of these kinds is not likely to be in excess of requirements, there is every prospect that current rates will be maintained, especially as they show excellent value compared with the next higher grades, and a good working stock may safely be held. For the lower sorts the market has been somewhat irregular, the poor liquoring teas being difficult to dispose of at former rates, while the more desirable lots were well competed for at steady prices. The recent firmness in the value of all good descriptions of Ceylon teas has been well maintained, and in many cases higher prices have been paid. This has been particularly noticeable in the medium kinds of Pekoe and good-class Pekoe Souchongs, which have advanced $\frac{1}{4}d.$ to $\frac{1}{2}d.$ per lb., while the lower grades also, in many instances, show a rise on previous rates. The upward movement in prices has not been confined to whole leaf descriptions, as broken Pekoes from about 8d. downwards have been in active request, the tone generally being very much firmer. The sales included a somewhat better selection of good teas, although the finest grades are still scarce, and the few parcels offered met with good competition, and realised full rates.

DISTRICT ASSOCIATIONS.

KANAN DEVANS.

A GENERAL MEETING was held at Manalle on 30th January 1897, when there were present:—Messrs. W. Milne, J. W. Schmid, W. D. Martin, R. F. Russell, A. H. Meade, F. J. C. Martin, E. Harley, J. H. Hunter, H. E. Tollemache, F. Armstrong, Baron Joon Rosenberg (President), A. H. Sharp (Honorary Secretary), W. Flemming (by Proxy, Baron von Rosenberg), R. C. Tollemache (Visitor).

Read notice calling the meeting.

Read and confirmed minutes of Annual General Meeting held 9th May 1896.

Resolved that there was no present necessity to build a new dispensary.

Read and confirmed minutes of committee meetings held on July 18th, 1896, and September 4th, 1896.

Read letter from President, District Board, Madura, dated 30th November 1896, giving cover to copy of a letter addressed to the Honorary Secretary, Lower Pulni Planters' Association, stating that there was no chance of a vacancy occurring among the nominated members of the District Board prior to June 1897.

The Honorary Secretary was instructed to reply in suitable terms and to keep in correspondence with the Honorary Secretary of the L. P. P. A. with a view to obtain a seat on the Board as early as possible.

Proposed by the Honorary Secretary and seconded by Mr. H. E. Tollemache that Mr. A. F. Martin be elected a member of Association representing Chittavarai Estate. *Carried.*

Proposed by Mr. Milne and seconded by Mr. Armstrong that Mr. P. Reed be elected a Member representing Pullivasal Estate. *Carried.*

Roads and Communications.—Read letter from the President, District Board, Madura, stating that although the Tanee to Bodinaickanur road would be completed next year, there was no probability of the road being continued to the foot of the Ghaut or of the rivers at Tanee and Periaculam being bridged.

The Honorary Secretary was instructed to continue to press the importance of these roads being completed at once, as at present they are absolutely impassable for days together.

Baron vonRosenberg placed before the meeting the necessity of the better upkeep of the district roads. Proposed by Mr. Milne and seconded by Mr. Tollemache that the Honorary Secretary and another member of the committee ask Mr. Gordon if he would be prepared to undertake the contract for the upkeep of all or any of the roads. *Carried.*

Read correspondence with the Honorary Secretary, Lower Pulni Planters' Association, with reference to the proposed Podanur Railway. *Recorded.*

Baron vonRosenberg moved the following resolution: That this Association is of opinion that more prominence should be given to roads and communications by the U. P. A. S. I. at the next Annual General Meeting.

Meetings.—Proposed by Mr. A. F. Martin and seconded by Mr. F. J. C. Martin that in future General Meetings of the Association shall be held every three months. *Carried.*

Estate Labour.—Resolved that the labour on an Estate belongs to the Estate and not to the Superintendent, and that members' attention be called to Rule VI., and that duplicate discharge certificate be printed.

Labour Rates.—Contract rates having been agreed to, the Honorary Secretary was instructed to have the same printed both in English and the Vernacular.

Low Country Establishment.—Proposed by Baron vonRosenberg that the present system of acreage assessment was not a fair method of securing the requisite fund, and that the storage fee should be raised sufficiently to meet the required amount. This to have effect from the 1st May 1897. *Carried.*

Mettu Bungalow.—Mr. Armstrong undertakes the supervision of the Mettu rest house.

Bodinaickanur.—Resolved that the Association address the Sanitary Commissioner, Madura, with reference to the insanitary condition of Bodinaickanur.

Western Outlet.—Read Mr. Benzie's report on the route from Arnacolum to Cochin. Resolved that now this route has been proved feasible, the Dewan be addressed and asked to immediately appoint an officer to inspect and report on the same and at the same time to allot necessary funds.

General Meeting.—Resolved that the Annual General Meeting be postponed to the last Saturday in May to enable the Honorary Secretary to circulate copies of the accounts before the meeting.

Membership.—Proposed by Mr. Milne and seconded by Baron vonRosenberg that each Estate, the property of the Consolidated Tea and Lands, &c., Ltd., be allowed a vote, the number of votes so

held being limited in number to equal those held by Estates not the property of the above Company. *Carried.*

The meeting closed with a vote of thanks to the chair.

A. H. SHARP,

Honorary Secretary

SHEVAROYS.

PROCEEDINGS of the Monthly Committee Meeting held in the Victoria Rooms, Yercaud, on Monday, 11th January 1897, at 10 A.M. when there were present:—Messrs. C. Sice, C. Rahm (Junior), J. Large, W. W. Hight, F. D. Short, C. G. Lechler, E. H. King-Harman, R. Gompertz, (Chairman), H. W. Leeming (Honorary Secretary).

Notice calling the meeting was taken as read.

Read Letter No. 1031, dated 10th December 1896, from the President, Salem Taluk Board, stating that as the road from Nagalore Chemunathum has no maintenance allotment for its up-keep, it was not possible to hand it over for repairs to Mr. F. D. Short, as requested by this Association, under the A system on other contracts.

Our representative on the Taluk Board, having mentioned that he understood that the Board had no Funds available for this purpose it was resolved "That the matter be postponed for the present."

Read circular, dated 14th December 1896, from the Secretary, U. P. A. S. I., enclosing "opinions regarding Mr. Hockin's claims."

Our Honorary Secretary's letter, dated 21st December 1896, reply thereto, was approved.

Read circular, dated 14th December 1896, from the Secretary, U. P. A. S. I., re Subscriptions to the U. P. A. Reserve Fund.

The Honorary Secretary's reply thereto was approved.

Read and recorded circular, dated 21st December 1896, from the Secretary, U. P. A. S. I., enclosing G. O. on—

"The investigation of the Malarial Parasite."

Read circular, dated 3rd January 1897, from the Secretary, U. P. A. S. I., re Individual Membership to the U. P. A.

Resolved "that this matter be brought before the Quarterly General Meeting to be held this day."

Read and recorded G. O. No. 1905, dated 3rd December 1896, refusing our request that the Deputy Tahsildar at Yercaud should be invested with Civil Powers.

There being no time left for transaction of further business, remaining subjects were postponed for future consideration.

With a vote of thanks to the Chair, the meeting terminated.

R. GOMPERTZ,

Chairman.

H. W. LEEMING,

Honorary Secretary

PROCEEDINGS of the quarterly General Meeting held in the Victoria Rooms, Yercaud, on Monday 11th January 1897, at 1-30 P.M. when there were present:—Messrs. W. Rahm, C. Rahm (Junior), W. J. Lechler, C. Dickins, C. G. Lechler, E. H. King-Harman, W. W. Hight, F. D. Short, J. C. Large, S. M. Pritchard, R. Foul, T. B. Nicholson, R. Gompertz (Chairman), C. Sice, H. W. Leeming (Honorary Secretary).

Notice calling the meeting was taken as read.

Read and confirmed Proceedings of the Committee for the quarter.

The question of "Roads on the Shevaroyes" having been brought forward for discussion, it was resolved

"That a Special General Meeting be called, at 1 P.M., on January 1897, at the Victoria Rooms, Yercaud, to consider the matter."

Read circular, dated 3rd January 1897, from the Secretary, U. P. A. S. I. (which was brought forward from this day's Committee Meeting) re individual membership to the U. P. A.

Resolved "that the matter lie over till a reply is received to the Honorary Secretary's letter of the 5th January 1897."

The Honorary Secretary asked the permission of the Meeting to forward the subjects which were postponed from to-day's Committee Meeting; and, these having been declared "urgent," business was proceeded with.

Read letter No. 2598 General of 1896 from the Superintendent of Police,

in District, enclosing particulars of a case of coffee smuggling woman (Allammal) for which she was fined Rs. 5 by the Salem Sub-Magistrate, this being the first case the Magistrate that a nominal punishment would suffice.

Resolved "that a sum of Rs. 10 be given through the District Superintendent of Police, to each of the two constables from the Police Fund; and that the attention of the Collector be drawn to the utter insufficiency of the punishment awarded in this case."

Read and recorded copy of letter No. 27916, dated 11th December 1896, from the Postmaster-General, Madras, to the Superintendent of Post Office, Coimbatore Division, stating that the Post Office at Bangalore, was made permanent subject to the condition that should there be a loss in any month the Planters interested will be it good."

Read letter from Mr. Acworth, dated 15th December 1896, re the proposed Coffee Association Scheme.

Resolved "that the Hon. Secy. be instructed to write the Secretary, U. P. A. S. I., informing him of the intention of this association to bring forward this subject at the next General Meeting of the P. A."

The following papers were laid on the table:—

November Proceedings of the Coorg Planters' Association.

December Proceedings of the Wynaad Planters' Association.

"Agricultural Ledger," Nos. 8, 21 and 29 of 1896.

"Planting Opinion" for December 5th and 19th, 1896.

With a vote of thanks to the Chair the meeting terminated.

ROB. GOMPertz,
Chairman.

HERBERT W. LEEMING,
Honorary Secretary.

PROCEEDINGS of the Special General Meeting held in the Victoria Rooms, Yercaud, on Monday, January 25th, 1897, at 1 P.M., to consider "the construction and up-keep of all roads on the Shevaroy's planting the Planting Industry." Present:—Mr. F. D. Short, The Rev. Father J. Bruyere, Rev. M. Andersen, Rev. J. M. Kempt, Messrs. C. Rahm (Junr.), T. B. Nicholson, R. Foulkes, R. Gompertz (Chairman), S. M. Pritchard, C. Sice, J. C. Large, C. G. Lechler, W. Hight, E. H. King-Harman, H. W. Leeming (Honorary Secretary).

Proxies:—Mr. F. D. Short for Messrs. T. H. Short, E. W. Short, L. B. Short, C. K. Short, B. N. Short, E. R. Laing, and Mr. E. H. King-Harman for Mrs. Gaitskell.

Notice calling the Meeting was taken as read. The following proposals on the above subject having been brought forward and spoken by Mr. Leeming were, after some discussion, put to the Meeting.

Proposed by Mr. Leeming, seconded by Mr. C. G. Lechler, That a Fund be started called 'The Shevaroy Road Fund' for construction and repair of all public roads and rights-of-way affecting the Planting Industry on these Hills, other than those which are already kept up by Government." Carried unanimously.

Proposed by Mr. Leeming, seconded by Mr. J. C. Large, That Government be asked to grant an allotment to this Fund, each year, of a sum equal to that subscribed by the Planters here." Carried unanimously.

Proposed by Mr. Leeming, seconded by Mr. C. Rahm (Junr.), That Government be asked to allow the control of this Fund to be placed in the hands of the Executive Committee of the Shevaroy Planters' Association. Carried unanimously.

Proposed by Mr. Leeming, seconded by Mr. F. D. Short, That as there is no intention whatever to interfere with any public or private rights, Government be asked, in order to save necessary and prolonged delays, to authorize this Committee to sanction the construction and repairs of these roads whenever applications for this purpose are sent in by Planters concerned." Carried unanimously.

Proposed by Mr. Leeming, seconded by the Rev. M. Andersen,

"That the accounts of this Fund be submitted every half-year for inspection to the President, Salem Taluk Board, or any other official that Government may choose to select. Carried unanimously.

Proposed by Mr. Leeming, seconded by Mr. E. H. King-Harman, "That Government be asked to grant a right-of-way to each estate on these Hills which could, when necessary, be turned into a cart-road, if possible." Carried unanimously.

Proposed by Mr. Leeming, seconded by Mr. T. B. Nicholson, "That Government be asked to state the width that is allotted (1) to Public Roads, (2) to Rights-of-way on the Shevaroy's." Carried unanimously.

The Honorary Secretary was requested to forward the above resolutions to the Chief Secretary to the Madras Government, through the Collector of the District, in the hope that Government will be good enough to meet the wishes of the Association in these matters.

Proposed by the Rev. M. Andersen, seconded by Mr. R. Foulkes, "That Funds for 'The Shevaroy Road Fund' be raised by (1) By voluntary Annual Subscriptions or (2) By a yearly tax of Annas Two per acre on each holding. Carried unanimously.

The Honorary Secretary having informed the Meeting that he would be absent from the Shevaroy's during February, it was resolved—"That the usual Monthly Committee Meeting for February should not be held." At the request of the Honorary Secretary, however, Mr. C. G. Lechler kindly undertook, in the event of any question of importance arising, to call a Meeting for its disposal.

With a vote of thanks to the chair the Meeting terminated.

ROB. GOMPertz, Chairman.

HERBERT W. LEEMING, Honorary Secretary.

WYNAAD.

THE following are the proceedings of the Annual and General Meeting held at the Meppadi Club on the 6th ultimo. There were present Messrs. Abbott, Atzenwiler, DeFonblanque, Hockin, Lamb, D. Mackenzie, W. R. Mackenzie, W. Mackinlay, B. E. Malcolm, J. R. Malcolm, J. S. Malcolm, M. D. Taylor, Trollope, Waddington, R. K. Walker, H. B. Winterbotham and Wright. Mr. B. E. Malcolm, Acting Honorary Secretary. Mr. R. K. Walker, in the Chair.

Annual Report, 1896.

The Acting Honorary Secretary read the following Report:—

MR. CHAIRMAN AND GENTLEMEN,—As your Honorary Secretary has resigned his office, it remains with me, who have been acting for him, to make the Annual Report.

It has been customary for some years past to divide the Annual Report under two heads, one the affairs affecting the planting community in general, and the other local matters, and I have kept to this arrangement.

General Committee of Enquiry.—The most important event of the year has been the appointment by the Government of India of a Committee to enquire into our labour and coffee stealing difficulties. This Committee, after sitting for over six months, has completed its report, and we must hope that it will not be very long before the planting community hears the decision of Government, which we await with considerable anxiety. In the meantime it is a matter of satisfaction to know that the Committee was formed of members who were not only competent to go thoroughly into the subjects before them, but who evinced a sympathetic patience and care in dealing with the evidence on which we may congratulate ourselves, and our thanks are especially due to Mr. Hockin for his share of the work as the planters' representative.

U. P. A. S. I.—The United Planters' Association Meeting was held as usual at Bangalore in August last. It is a matter of regret that the book of proceedings has not, as in previous years, reached us by the end of the year; but the delay has no doubt been caused by the difficulties the Secretary has had in collecting statistics which were to have been included in the book this year. This Association, I regret to say, is one of the principal defaulters in this respect. Owing, however, to the full reports that appeared in the Press, you are fully acquainted with all matters of importance that were discussed at the meeting, and I will only refer again to one or two of them. The financial position of the U. P. A. was, as you are aware, gone into at some length, with the result that the subscriptions of Associations were raised 50 per cent. to cover actual working expen-

diture; and a reserve fund was started to which any one, who so wished, could subscribe. The Resolutions of this Association on this matter are so clear that there is no necessity to discuss it further; but there is one point which will come up again this year, in this connection, that will require your attention, and that is the advisability or otherwise of allowing individual membership of the U. P. A. The U. P. A. was started as, and is still, an Association of Associations, and whether it will be wise to allow individual votes is a question that will require careful consideration.

Import Duties.—Owing to the representations of the Hon'ble Mr. Hodgson, our Member of Council, Government has the matter of Import duties on chemicals used as artificial manures under consideration. By the removal of these duties the prices of some of these valuable fertilizers would be reduced to an extent that would allow of their being taken into general use as manures, and it is needless to point out the immense benefit this would be to planters. Mr. G. L. Yonge, the Secretary of the Association, resigned his office, and did not offer himself for re-election. As Honorary Secretary of this Association for many years he took a great interest in the welfare of the District, and showed a continued interest in planting matters by taking up the Secretaryship of the U. P. A. in its early youth. Our thanks are due to him for his endeavours on our behalf.

Local Roads.—Chundale-Mysore. The correspondence which was carried on last year, and for some time previously, ended in a sufficient sum of money having been granted to complete the metalling and culverts of that portion of the road between Sultan's Battery and the Mysore frontier; and it is gratifying to know that we shall in future have good communication with one of our principal grain-supplying sources. It is, however, a matter for regret that this work has only been done in sections and there are still many portions of the road which are practically impassable during the monsoon. In spite of all representations to the contrary, this road was handed back to the Local Fund Board early in the year. In September last a deputation from this Association went down to Calicut to approach His Excellency the Governor on the matter. His Excellency's reception of the deputation was most kind; and his reply that the matter should be looked into, and that he did not think there would be any difficulty in supplementing the grant for this road, if found necessary, was very satisfactory. It is to be hoped that as the new financial year is approaching, the matter will receive the early attention it merits.

Coffee Robbery.—The excellent Police arrangements made by the Superintendent of Police, Mr. Fawcett, continue to have the same beneficial effect in checking thefts as was the case last year. Up to the present time no representation of any thefts has been made to the Association; and so far as I am aware none have occurred.

Kutcherry at Meppadi.—A most satisfactory arrangement has been instituted by the 2nd Class Magistrate at the request of the Collector under which he holds his Kutcherry at Meppadi on the 2nd Monday and Tuesday of every month. Previously residents in Meppadi and to the South of it had to ride from 10 to 20 miles to attend Kutcherry at Vayitri. This necessitated a considerable loss of time in many ways and is now obviated,—Kutcherry being now held within easy distance of all residents in the Meppadi and Vellera Mulla Districts.

General Remarks.—The number of members on the Association books at the last General Meeting was 39. We have had the misfortune to lose one of our oldest members by the death of Mr. W. C. Dawson of Manantoddy. One member resigned and three new members have joined the Association; the total now on the books is 40. The District has made steady progress in the opening up of tea, and the prices realised have continued to be very satisfactory. No attempt has as yet been made at opening a central factory to which tea could be sent by small holders, although, as has been pointed out by Mr. Standen, it would be a practicable and paying method, and one for which the district offers many facilities. Liberian coffee has been planted to a considerable extent, and crops from this product are beginning to come in. The pulping and curing of this coffee is a matter which is causing considerable anxiety to those who have to do with it, and is one of such importance that all concerned will have to give their attention to it. Arabica coffee, in spite of a worse attack of leaf disease than usual, is doing fairly well. It is to be hoped that the seasons of exceptional drought we have been suffering from for the past two years will not be

repeated, in which case we may hope for better crops next season than we are getting this. A considerable proportion of shortage crops this year is due on many places to the terrific weather we experienced during the past monsoon, a monsoon that has put the record of 1882 quite in the shade. The accounts, gentlemen, are on the table, and I lay my resignation in your hands.

I very much regret that I have not been able to devote as much time to the affairs of the Association as they required; but I had but little to spare.

(Signed) BERNARD MALCOLM,

January 6th, 1897.

Acting Honorary Secretary.

The Report and Accounts were unanimously approved and adopted. *Honorary Secretary.*—The Chairman proposed a cordial vote of thanks to Mr. B. E. Malcolm for his services as Acting Honorary Secretary Delegate to the U. P. A. S. I. Meeting at Bangalore, which was passed unanimously.

At the request of the Meeting Mr. J. W. Hockin resumed his Honorary Secretaryship for a time.

The meeting then resolved itself into the

Ordinary Monthly General Meeting.

Proceedings of last meeting were taken as read.

Import Duties.—Read letters from Messrs. Peirce, Leslie and and Burnett and Sons. Recorded.

Coffee Robbery.—The Honorary Secretary was instructed to address the Inspector-General of Police pointing out the arduous and unwholesome nature of the work of the constables employed in preventing coffee robbery and especially of the constant night-duty, and to request that some corresponding compensation may be given them.

Roads.—Read letter from the Acting Honorary Secretary to the Collector of Malabar dated the 11th ultimo asking what steps have been taken to enquire into the system of keeping up the road Wynaad in accordance with the reply of His Excellency the Governor of Madras to the Deputation from this Association in September last. To this a reply has not yet been received.

The Honorary Secretary was instructed to address the Collector of Government, requesting the appointment of an independent officer to report on the whole system of upkeep of the roads in Malabar-Wynaad and of those connecting the district with the ports on the Coast.

U. P. A. S. I. Circulars.—Read Circular from the Secretary, U. P. A. S. I., regarding Mr. Hockin's expenses and the Acting Honorary Secretary's reply thereto.

The meeting resolved that this Association endorses the suggestion of the Chairman to the effect that a special payment should be made by each District Association to meet these extraordinary expenses in proportion to the votes each Association is entitled to at the meetings of the U. P. A. S. I., and authorises the Honorary Secretary to remit its share of such expenses to the Secretary, U. P. A. S. I.

Read Circular *re* Statistics of Estates.

The Honorary Secretary was directed to inform the Secretary, U. P. A. S. I., that he had endeavoured to collect these, but had only received five returns, of which only one was complete; and that the great majority of planters and mercantile firms in this District decline to fill up the returns, as they regard them as too inquisitorial.

Read Circular *re* "Subscriptions to the Reserve Fund." Recorded.

Read Circular *re* "The Investigation of the Malarial Parasite." Recorded.

Act XIII. of 1829.—Mr. Hockin drew the attention of the meeting to the fact that he had been informed by the Second Class Magistrate of Vayitri that he had received instructions to hold a search enquiry into the truth and nature of every complaint made before him under this Act before granting a warrant, and not as hitherto to grant a warrant on the complainant swearing to the truth of the complaint, and postpone the enquiry until the appearance of the accused. Under these circumstances, it behoved them to be careful that their agreements with maistries, and more especially the maistries' agreements with coolies, contained nothing which was opposed to any High Court Ruling. If the agreements did, the courts would find warrants refused them. It was the ancient custom of the country, and an old custom of maistries and coolies, to draw up agreements so that the advance should be repaid only on the termination of the contract, and work should be performed until there

t of the advance. The former has been ruled "to be a loan to be repaid at the close of the contract," and not an advance on account of work, and as part of the payment for it. (H. C. P. 9 Jan. 1880, 39.) The latter has been also ruled to put the agreement outside of the Act. (H. C. P. 12 Dec. 1871, No. 2181.) A maistry has recently refused a warrant because he deposed that the advance was to be repaid on the settlement of wages at the close of the season. As a matter of fact, it is the custom of the District to hold the balance of coolies' wages each month on the Check Roll as a set off against the advance, and only to pay one or two months' wages when other months' balance remain unpaid. This is a monthly recovery of the advance from wages earned on account of work performed under the contract, but it must be impressed on maistries that they must make their agreements with coolies so as to arrange for this monthly payment, and not for a repayment in one lump sum at the end of the season.

The following are the main points to be attended to in drawing up an agreement that will come under Act XIII. of 1859:—

The advance must be a fresh one on account of work to be performed (a contract only to bring coolies is not under the Act) and as to the wages to be paid for such work. H. C. P. 28 Feb. 1876, 628; H. C. P. 20 July 1877; C. R. C. No. 19 of 1885.

Old balances of advances or debts can be included in this advance without withdrawing the agreement from the operation of Act XIII. R. Bombay XVII. 368; I. L. R. Bombay 9 Bom. 171.

These can, however, be recovered on settlement of accounts, if a coolie does come to work, and if he does not, a warrant can be obtained for the new advance.

Repayment of advances must be by named definite instalments from wages at fixed periods.

I. L. R. 7 Mad. 131, No. 440 of 1883.
" " Bom., No. 501 of 1891.

This fixes the duration of the contract which ends on the expiry of the last period of payment. (M. H. C. No. 354 of 1891.)

Under such an agreement the whole of the balance of the wages to be paid the coolie for maintenance, and thus the difficulty of settling accounts can be avoided.

It is better, however, to name a period in which the work is to be performed as a "Contract to work till repayment of the advance is made within the Act" (H. C. P. 12 Dec. 1871, No. 2181), and it might be possible to enforce fulfilment of contract at the particular time fixed.

If a period is named, allowance should be made for default by stipulating that as many days work as are not performed during the period of contract shall be performed subsequently; or, if the contract is not performed, that it shall be at any time in the next six years that the contractor may be called on to do so by his master. If this is not done, the Court cannot order the execution of the work after the expiry of the period agreed on (M. C. R. C., No. 183 of 1884, No. 179 of 1883, and March 29, 1865). Only payment of the advance can be ordered, though there is no limit of time for such an order (M. C. R. C., No. 448 of 1878).

It would point out that it is especially necessary to impress on maistries that they must make their agreements in accordance with the above rulings if they wish to secure warrants in case of default. Maistries and coolies seem to think the old customs of the country are binding still, and are consequently puzzled and aggrieved when the local Courts follow the High Court rulings.

Mr. Hockin was requested to print his remarks at length for the benefit of the members of the Association.

The Honorary Secretary was also instructed to ask a lawyer to draw up a form of contract that will satisfy all recent High Court rulings on Act XIII. of 1859.

Agenda lists.—In giving notice of future meetings, the Honorary Secretary was requested to send as complete a list of agenda as possible.

Papers on the table, Prize List of Madras Agri-Horticultural Society.

A vote of thanks to the Chair closed the proceedings.

ONE THOUSAND LLAMAS LADEN WITH GOLD.

Who doesn't like to read about buried treasure? Who hasn't dreamed of finding it? What delight suddenly to possess vast riches? Shining

gold, sparkling gems! Things for which we have not been obliged to scheme or toil; that will free us from all need of scheming or toiling thereafter! Ah, let us not indulge such fancies. They make work seem like slavery and wages like pinches of common dust. Yet that such hidden masses of wealth exist there is no doubt. But where are they?

About four centuries ago the Emperor of Peru was a captive in the hands of the Spaniards. His people sent a train of 1,000 llamas (a small beast of burden resembling a camel) laden with gold to ransom him. While on their way, crossing the Andes mountains, the men in charge of the expedition heard of the death of the Emperor, and concealed this enormous treasure so effectually that not a trace of it has ever been found. Go and dig it up, and you will never again feel the sting of poverty.

But clap the brakes down hard on the wheels of your imagination. What was money to Robinson Crusoe? What would the wealth of Peru have been to Mrs. Jane Stranks during a certain period of eighteen months that she tells about? Dust, my dear fellow, countless pinches of common dust. Here is the reason why—one more picture of that fearful furnace in which all earthly desires are melted into one prayer—"Oh, God, deliver me from pain!"

"In June, 1891," she says, "I had an attack of influenza, followed by bronchitis, which left me very low and feeble. I had no appetite, and the little food I forced myself to take gave me pain and palpitation of the heart. I had a weary, sinking feeling at the pit of the stomach and was obliged to fight for my breath. I had a continuous hacking cough, and spat up quantities of thick phlegm. Later on I had *gout all over me*, as it were, my hands, face, and legs being puffed up, and was in agony day and night. I became so weak I could not raise my hand to my mouth, and had to be fed.

"For months I lay perfectly helpless and almost lifeless, having to be lifted in and out of bed. Four doctors attended me for nine months without effect. Then they told me they could do nothing for me, one of them giving me a letter of recommendation to Guy's Hospital. At Easter, 1892, my husband took me in a cab to that hospital, and I was placed in the Miriam Ward, and examined by several doctors.

"At this time a hard substance seemed to have formed in my stomach, which the doctors said was a tumour, and treated me for it. I got weaker and weaker, until one night the nurse told me that the doctors had said I was as bad as I could be, and would not probably live through the night.

"The nurse placed a screen around my bed, expecting me to die.

"Taking a slight turn for the better, I returned home, but was soon as bad as ever. After this I got a letter of recommendation from our landlord, and attended as an outdoor patient at Victoria Park Hospital. After being under treatment a month, I lost all faith in medicine and gave up taking it. I was now *little more than a liking misery*. I was tired of life, and often prayed that the Almighty would take me. I now had fits of shaking so bad that the bed trembled under me. My head was so full of pain that I thought I was going mad, and several times a day I lost consciousness.

"In this dreadful condition I lingered on until November of last year, 1892, when a book was left at our house telling of a medicine called Seigel's Syrup. I had lost all hope of getting well, but my husband would have me try this medicine. To please him I did so; and, after taking it a few days, I felt a little relief. My breathing was easier and my appetite revived. Continuing with the medicine all pain gradually left me, and I gained strength daily. In six weeks I was able to go about the house and do light work, the first time I had done anything in eighteen months. I am now in good health, and able to do any kind of work. I owe my life to Seigel's Syrup, and wish my case to be made known." (Signed) Jane Stranks, 22, Gaywood Road, Hoe Street, Walthamstow, near London, April 29, 1893."

No words of comment can be too strong for a case so remarkable. We stand before it at a loss what to say. It is not a miracle, of course; although many a reputed miracle has been less wonderful. How is it possible that Seigel's Syrup could, with such apparent ease, have restored to health a person in so desperate a strait? Yet that it did restore her is certain. The facts have been thoroughly investigated and established beyond dispute. Mrs. Stranks was on the crumbling edge of the grave, and was thence brought back to the region of health, activity, and enjoyment. How was it done? There is the simple secret. The influenza left her whole system debilitated, as it usually does. Indigestion—which in the first place invited influenza—attacked her with increased power. Asthma, heart disturbance, nervous prostration, the inflamed and congested stomach, which was mistaken for a tumour, etc., etc.—all results and symptoms of arrested digestion—followed. The private and also the hospital treatment failed, because it was directed to the symptoms, not to the cause. Finally, Mother Seigel's Curative Syrup was appealed to, and responded by setting the digestive function in operation, expelling the poison from the blood, and placing Mrs. Stranks at the head of her house, a *saved woman*. But it was a marvel all the same.

As to that pile of treasure hidden in the Andes. We should like to have it. Oh, yes. No use saying we shouldn't. But as between riches and health—give us health. For what would gold have been to Mrs. Stranks the night she lay behind the screen—given up to die? Ask yourself that question.

MARKET SUPPLEMENT.

SATURDAY, FEBRUARY 20, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (January 29, 1897) says:—Supplies at Public Sale have again been light and the market continues firm for nearly all descriptions of the article.

The second arrival of new East India was catalogued yesterday and the competition being very keen, extreme rates were realised.

Good prices were obtained for Columbian and Guatemala, colory kinds showing an advance of 6d. to 1/-.

Futures have been quiet during the week with only a small business passing and quotations have dropped back a further 3d. to 9d.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending January 27th, 1897, says:—Bank rate $3\frac{1}{2}\%$. Bombay Exchange closes at 1s $3\frac{3}{8}$ d. Brazil Exchange $8\frac{1}{2}$ d. Rupee paper $3\frac{1}{2}\%$ 62½. Silver $29\frac{1}{2}$ d per oz.

Coffee continues firm for all kinds, the better qualities being again rather dearer. The very small supply of Plantation Ceylon again realized extreme rates. Brazil markets are quiet.

Daily receipts have averaged 9,428 bags in Rio, and 10,428 bags in Santos.

The Dutch Sale held on the 26th inst. comprised 23,875 bags 185 cases, and was all sold at an irregular advance of $\frac{1}{2}$ to 3 cents, good ordinary selling at 51½ cents against 52 cents in November last.

The market for "Futures" is quiet, and quotations show a decline of 9d to 1s 3d, viz.:—Good average Santos in Havre, March delivery closes at fcs. 62.50, in Hamburg pf. 51½, and No. 7 low ordinary Rio in New York \$9.40.

To-day's London official quotations are:—

	Jan.	March	May	Sept.	Dec.
Rio	49/-	48/-	48/3	48/6	49/-
SANTOS	50/6	50/9	51/3	52/6	52/9

We quote:—

Ceylon, mid. to good mid. 104/ @ 117/	Costa Rica, mid. to fine... 93/ @ 107/
Do. small to low mid. 87/ „ 102/	Do. ord. to low mid. ... 76/ „ 91/
East India, mid. to good mid... 97/ „ 106/	Jamaica, good to fine ord. 73/ „ 82/
Do. small to low mid. 87/ „ 94/	Do. greenish to fine colory... 88/ „ 125/
Guatemala, mid. to fine... 93/ „ 105/	African ... 42/ „ 44/
Do. good ord. to low mid... 74/ „ 92/	Columbian, ordinary ... 66/ „ 71/
Salvador, good ord. foxy greenish... 73/ „ 74/	Do. good ord. to low mid... 72/ „ 93/
	Do. mid. to fine... 93/ „ 106/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
RIO	2,416,000	1,771,000	1,623,000
SANTOS	3,844,000	2,544,000	3,051,000
	6,260,000	4,315,000	4,674,000

Auctions:—

3 casks and tierces 22 barrels and bags Plantation Ceylon	...	@ 96/	@ 120/
71 bags East India old crop, part sold	...	„ 91/	„ 94/
103 barrels 4 bags Jamaica	...	„ 69/	„ 103/
402 bags Guatemala, part sold	...	„ 72/	„ 95/6
39 bags Nicaragua	...	„ 67/	„ —
140 bags Vera Paz	...	„ 92/	„ 96/6
1,681 bags Columbian	...	„ 69/	„ 100/6
53 bags Guayaquil bought in.			
839 bags Ceara bought in.			
20 bags Liberian Johore		„ 40/	„ —
26 half-bales Mocha bought in.			

On Quay Terms:—

912 bags Santos bought in.			
250 bags Rio withdrawn.			
Landed last week 223 tons. Deliveries 483 tons. Stock 8,200 tons.			
Do. last year 195 „ „ 510 „ „ 7,784 „			

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of January 29th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1896-1897...1,143,085 packages.	742,135 packages.	25,211 packages.	
1895-1896...1,097,731 „	648,652 „	36,715 „	
48,076 pkgs. INDIAN	Total 68,726 packages were offered in public auction this week.		
20,311 „ CEYLON			
339 „ JAVA			

During the last few years an increasing business has been done in transshipment of Indian and Ceylon Teas. The total quantities thus sent from Great Britain to all places during the calendar years 1896 and 1895 are shown below.

It will be seen that there is a most encouraging increase in transshipment of both Indian and Ceylon Tea.

	1896.	1895.
Indian Tea	3,146,548	2,330,591
Ceylon Tea	1,482,619	983,712

Nearly the whole of the Indian Tea shown in the above figures was sent to the Continent of North America, while a very large portion of Ceylon went to the same quarter, but Ceylon is also freely exporting to Great Britain for transshipment elsewhere. The following table gives transshipments of Indian Tea and Ceylon Tea, separately, to the United States and to Canada during each of the past three calendar years.

Considerable progress has been made, and this branch of the trade, which is now becoming of considerable importance, appears capable of still greater developments.

Transshipments of Indian and Ceylon Tea to United States and Canada from 1st January to 31st December.

INDIAN.			
	1896.	1895.	1894.
Transshipments U. K. to U. S. A. ...	2,893,234	1,549,501	768,000
Transshipments U. K. to Canada ...	229,990	750,280	127,000
Total lbs. ...	3,123,224	2,299,781	895,000
CEYLON.			
	1896.	1895.	1894.
Transshipments U. K. to U. S. A. ...	929,834	625,324	274,000
Transshipments U. K. to Canada ...	236,092	255,408	98,000
Total lbs. ...	1,165,926	880,732	372,000

Indian. Rather a less quantity was brought forward, viz.: 48,076 packages, against 58,143 last week. The market was firm for all descriptions. The quality from Assam continues very good, and indicates a point to a generally good autumn crop from many of the districts. The following averages may be mentioned:—“Budla Beta,” 1/9; “Hatti,” 1/5½; “Upper Assam T Co. Nudwa,” 1/5; “Eastern Assam T Co. Bali,” 1/4½; “Amalgamated T Co. Dooteriah,” 1/4½.

Week's av. Tea sold on Garden Account, 1897, 34,548 pks., av. 1896, 31,480 pks., av. 9d. 1895, 29,372 pks., av. 10d.

	1897.	1896.	1895.
	Pkgs.	Price.	Pkgs.
Assam	16,325 p	10½	16,294 p 10
Cachar and Sylhet	8,504 p	7½	6,671 p 7
Chota Nagpore	42	7½	—
Darjeeling	1,207 p	1/0½	1,684 p 1/0
Dooars	5,920 p	7½	4,069 p 7
Kangra Valley, &c.	348 p	7	159 p 6
Neilgherry	237 p	5½	291 p 6
Terai	354 p	7½	123 p 8
Travancore	1,509 p	7½	2,093 p 7

SUPPLEMENT TO PLANTING OPINION.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
INGS. (Fair ordinary, dark liquor) ...	4½d	4½d	5d	4½d
INGS. (Red to brown, strong rough liquor) ...	4½d	4d	6d	4½d
EN TEA. (Brownish to blackish, strong liquor) ...	6½d	6d	7½d	5½d
SOUG. (Blackish greyish, useful liquor). ...	6½d	6½d	8½d	6½d
E. (Greyish to blackish, some tip, useful liquor) ...	8d	7½d	9½d	8d
SOUG. (Blackish greyish, inferior liquor). ...	5d	5½d	7½d	5½d
E. (Blackish greyish, some tip, inferior liquor) ...	5½d	5½d	8d	6d

ylon. 20,111 packages were brought forward, against 23,165 last Competition throughout the sale was keen, and prices for all es sensibly hardened, an advance frequently taking place, although

this is accounted for probably more by a slight general improvement in quality than any actual rise in the market. The following averages may be mentioned:—"Ormidale," 1/1½; "Campion," & "Henfold," 1/0½. Average for week rather over 8d. against 8½d. for same period last year.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor) ...	6d	6½d	8½d	6½d
PEKOE (Ordinary leaf, little twist; fair liquor) ...	7½d	7½d	9½d	8d
PEKOE SOUG. (Rather bold leaf; indifferent liquor) ...	5d	5½d	7½d	5½d
PEKOE (Somewhat bold leaf; indifferent liquor) ...	5½d	5½d	8d	6½d

Java. Only 339 packages were brought forward comprising invoices from the "Perbawatte" and "Djattie Nangor" estates; the sale passed with good competition at steady prices.

PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9½d.) January 29, 1897.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
gherry ...	237 p	5½												
Hope ...	130	4½							8	5½	110	4½	12	5
ra Falls ...	107½c	6½			40½c	7½			37½c	5½			30½c	7½
h Wynad ...	211 p	8												
maculla ...	68½c	7			27½c	8			41½c	6½				
ambyle & Che... 110 p	8½				25½c	8	40½c	1/	32 p	6½	10	5½	3½c	6½
mond ...	33 p	7	7½c	11½	12½c	8			14	5½				
ancore ...	1509 p	7½												
ccord ...	216 p	6½	108 p	7½	61	6			43	6			4	4
Ami ...	288	8			79	6½7½	146	8½8½	15	5½			48	7½ 8
more ...	72 p	7			23	6½	46½c	8					3½c	4½
on ...	25	7½			10	6½	13	8½	2	5½				
dy Goody ...	95	7½			41	7	30	10½	24	5½				
mary ...	145	8½	109	8½9½	17	6½							19	9
e ...	80½c	6½			35½c	5½	40½c	7			5½c	4		
d T Co. ...	70	6½	5	7½	54	6½7½							11	4½
mudi ...	195 p	6½	76½c	7½8½	80	6½			33	5½			6½c	4½
Travancore C.V. 235	6½				57	6½	178	6½7½						
brook ...	68	7½			43	7½	6	8½	19	6				
ardi ...	20	8½			6	8½	8	11½	6	6				

COCOA.

n advance of 1s to 2s has been paid for Ceylon, and the chief of 1,347 bags by auction found buyers at 54s to 60s for grey dull red; good but rather mixed small, 62s 6d to 65s; small grey, part weathered, 54s 6d; Native, 46s 6d to 54s 6d; 3,582 s West India found buyers, including Grenada at 1s to 1s 6d very, from 41s 6d to 45s, and fine, 45s to 47s 6d. Trinidad went er dearer, also small parcels of other colonial. A fair demand ails by private contract. Fine Ariba quoted 62s to 65s. 480 e foreign description by auction was chiefly bought in. The eries have, since the beginning of the year, been somewhat large.

CINCHONA BARK.

ne opening Dutch auctions of the year were held in Amsterdam erday, and produced the slightly larger supply of 7,137 packages , as compared with 6,984 packages at the preceding sales, and 6 packages in November last.

good demand again prevailed, notwithstanding the large ity offered, and upward of three-fourths found buyers, but the nce of last sale was lost, the average unit obtained being only as against 2½c in December last.

NCHONA.—We hear from Amsterdam, writes the *Chemist and ggist*, that during last Thursday's Java cinchona-auctions, of h we gave the result last week, a cablegram was received from nouncing that there would be a considerable decrease in the rts from the beginning of the year. This announcement, ver, fell flat, as disappointments have been very frequent of The richest parcel of bark offered at the auctions was one of

43 bales of crushed *Ledger*, representing an equivalent of 10·02 per cent. of sulphate of quinine. This lot realised the parity of 4½d. per lb. It was noticeable that fine *Manufacturing* barks realised a higher unit than the average, also that the quantity of bark purchased by manufacturers outside the quinine combination was very large. *Druggist's* barks did not attract much attention excepting for very fine qualities, and, on the whole, this variety was much more neglected than at the preceding auctions, and prices were lower.

BLACK PEPPER.—A continuance of speculative demand has resulted in some further slight advance. The transactions in Singapore amount to 500 or 600 tons. To arrive the latest sales include January-May shipment at 2 27-32d to 2½d. On the spot 2½d to 2 23-32d paid. There were only 80 bags Alleppy in the public sales yesterday, which realised 2½d for greyish.

NUTMEG.—Although the stock here is much reduced, the demand has not improved. The public sales yesterday were too small to report.

MACE is inactive, and no business reported.

CLOVES.—The demand for Zanzibar last reported has subsided, and the market is now rather quiet. 170 bales by auction, part sold at 2½d.

CINNAMON.—The market is firm, and not much offering.

CASSIA LIGNEA is hardening in price with a declining stock now 62,700 boxes, or far below the average of former years. A few thousand boxes have sold at 38s to 38s 6d per cwt.

PIMENTO is steady. 8,700 bags were landed last week, which brought the stock up to 20,000 bags. 588 bags by auction partly found buyers at 2½d to 2½d for the sound, being former rates.

OAKES AND CO., (Limited), OOTACAMUND,

GENERAL PURVEYORS,
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Every description of Planters' requisites Stocked or Manufactured to order at t
BEEHIVE FOUNDRY.

ADDISON & CO., Printers, Stationers, Bookbinders, Booksellers, &c.

	RS.	A.		RS.
Estate Check Rolls	6	0	Chesterman's Metallic Tapes, best quality, 50 ft.,	
Pocket do.	1	0	Rs. 7-0; 100 ft....	10
Faber's Office Pencils, H. B. & B. (soft and medium),			Sill's Flexible Blotter (the best hand blotter known).	3
per doz.	0	8	Addison & Co.'s London-made Blue-black Ink, qts.	1
Faber's American Rubber Bands, per box, 10 as.,			Stephen's Blue-black (Copying or Writing), quarts...	2
14 as., Re. 1-4 &	4	8	Do. do.	1
Faber's Ink and Pencil Erasers	0	6	Do. Violet-black Copying	2
Penholders, per doz., 5 as. to	3	0	Do. do.	1
Pocket Memo. Books, 7 x 4½, limp cloth, leather			Field's Non-corrosive Black Ink	3
backs	1	0	Do. do. do.	1
Pocket Cash Books, do.	1	0	Field's Treble-strength Copying Ink half-pints...	1
Letter Clips ... 4 as., 6 as., 8 as., 12 as. &	1	0	McNiven and Cameron's, Mitchell's, G. Brandauer's,	
Superior White or Pink Blotting Papers, per quire,			Gillott's, Perry's, and Walter & Co.'s (Centric)	
Rs. 2-0 to	3	0	pens in small and gross boxes ...from 7 as. to	8

**POCKET BOOKS, NOTE BOOKS, WALLETS, CASH BOOKS, LEDGERS, JOURNALS,
MINUTE BOOKS, &C., IN LARGE VARIETY.**

Any description of Estate printing and binding work neatly and promptly executed

ADDISON & CO., MADRAS.

PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

L. II.]

COONOR, SATURDAY, MARCH 6, 1897.

[No. 5.]

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Books for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, at Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a more uniform volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 13th March 1897.

KADUR, 3rd March.—*Weather.*—Heat very great lately during the day, but cool and pleasant early morning and evening. Some estates have had a good blossom out, but all of us want rain badly now. *Plant Diseases.*—Leaf disease still showing up on places, while others have got rid of it and are putting on new clothing. Trees have little or no wintering this year. *General Health.*—Fairly good. *Labour.*—Ample, and work is being pushed through as far as possible. This would have been a grand year to have had some advances, as labour was never so easy to obtain.

PEERMAAD, 28th February.—*Weather.*—Rainfall for the month 4·87. *Crops.*—Tea flush improving. *Coffee.*—The late show has had the effect of bringing out a small blossom. *General Health.*—Good. *Labour.*—Sufficient.

South Wynaad. **SULTAN'S BATTERY, 27th February.**—*Weather.*—Changed since last report, afternoons generally cloudy, and we've had several smart showers of rain which has brought out the blossom in several places. *General Health.*—Lots of fever amongst coolies, and the recent rain no doubt will not improve matters. *Labour* will be paid off shortly.

Coorg. **POLLI BETTA, 1st March.**—*Weather.*—From 75 cents to 2 inches of rain fell from the 16th to the 19th ultimo, both inclusive. Though for succeeding two or three days it was cloudy and threatening, it subsequently cleared up and was in every way favourable for the setting of what blossom was brought out. Little or no wind. *Crops.*—Gleaning of the past crop nearly all finished, and nearly all coffee sent away. It is estimated that from an $\frac{1}{8}$ th to $\frac{1}{2}$ of the blossom has been brought out. Great bulk of blossom opened on 29th. *Labour.*—Coolies paid off in many cases. Sufficient left for dry weather requirements. *General Health.*—Fair, some coughs and fever still prevalent.

S. E. Wynaad. **PUNDALUR, 2nd March.**—*Weather.*—On the 16th, 17th, 18th and 19th February we have had very good rains; since that at nights heavy dew is falling, and during the day it is cloudy and at intervals very hot. *Crops.*—The rains brought the spikes forward and the blossom has set. The tea on Richmond Estate is flushing unceasingly. *Plant Diseases.*—Nil. *General Health.*—The fever season is beginning and so slight head-ache and fever is on the coolies. *Labour.*—Ample. *Interesting Items.*—To procure lands about Davala, Nellyalom and Pundalur, I think those who are far off should appoint Mr. H. Atzenwiler to act as their agent as he knows very well almost all the blocks available about the places. And those who want lands about Meiyor Range and Cherambaddy I think Mr. H. Punnett for the former and Mr. P. Guard for the latter may act as agents also.

North Wynaad. **MANANTODDY, 27th February.**—*Weather.*—From date of last report on 18th

LPS & CO., Fashionable Tailors and Costumiers, 16, Old Court House Street, Calcutta. (Ladies' Department: 4, Russell Street.)

ultimo, has been hot for the time of year, and land and sea breezes, (latter particularly), misty mornings and decoy nights have been the rule, parching East winds having been conspicuous by their absence, fortunately for the coffee. Clouds began to bank up for rain towards middle of February, and there was a moderate thunder shower of 81 cents on 14th, since which date weather continued showery until 22nd, giving Manantoddy 1.88, inch but rainfall has been irregularly distributed throughout N. Wynaad. Greatest fall was in the vicinity of Banasúr Mountain, where over 3 inches was gauged, 1.87 inch of which fell on 16th. *Crops*.—Liberian coffee is ripening very early this season, and some was gathered on 17th instant. Coffee blossom was fully out on 24th at and around Manantoddy and Banasúr Mountain, in a somewhat limited radius; beyond that point the blossom was a partial one, the rainfall having been rather deficient, but the backward spike on trees which suffered more severely from leaf-disease was forced forward, and coffee, generally, has had a fine setting-up and has become clothed in shiny new leaves and shoots. *General Health*.—Fairly good; fever in Bamboo district. *Grain*.—Ragi dearer by 5 seers than previously. Rice, unaltered.

Nilgiris.

SHOLUR, 28th February.—Rainfall during month 2 in. 44 cts. Lowest and highest temperature between 6 A.M. and 6 P.M. in shade 40° and 72° respectively. Tea coming on well. Labour very plentiful and health good. Price of ragi same as last week.

COONOOR, 4th March.—*Weather*.—Rain all cleared off on 21st ultimo, total being 5.82, northerly estates getting most. Hot sun and dry March winds are doing their best to dry all up again. *Crops*.—Some low elevation gardens have fair blossom out, but high estates are not so fortunate. With luck and more good rain later on, crops should be good. Tea flushing very well and promises to do still better later on. *Plant-diseases*.—Almost nil. Leaf diseases cleared off for the present altogether. Flushworm in tea insignificant. *General Health*.—Fair. *Labour*.—Plentiful as usual. The old, old fight between cattle and artificials going on briskly with a strong pull in favour of latter. Yearly manuring becoming the vogue, *vice* ancient way of feeding the trees only once in two or even three years. In some places cattle manure is refused, in others as much as 4 as. per bushel is gladly paid. Some hold bratties and leaf-disease are inseparable companions, others pin their faith to it.

GENERAL NOTES AND ARTICLES.

Insurance.

Let shippers and planters remember that by effecting insurance by Sea free of particular average, a saving is made of at least 60%. And free of particular average answers sufficiently well in these days.

To young capitalists.

Says an old North Borneo planter in the *Selangor Journal*:
“Youngsters, fresh out from home, and people who have never learned to plant coffee or to work with coolies, start their own plantations, and very often they lose their money. Let me, therefore, give a warning to those young and inexperienced planters, not to risk their money under any consideration in an estate under their own management. If you are in a hurry and you have the capital, engage an experienced and trustworthy planter to manage your estate for you but keep away from it yourself: don't work on your own estate as an assistant. If you want to learn planting, do so on some other estate, but don't attempt to manage your own before you are sure that other people would not be afraid to entrust you with the management of their estates. If proprietor and manager live together on the same estate, it rarely gives satisfaction.”

PHELPS & CO., Calcutta, have probably the largest and best assorted stock of Woollens in India and will be pleased to send patterns and form of self-measurement.

Teosinte in Ceylon.

In a report on some fodder experiments made in Ceylon, we note that trials were made with teosinte or reana (*Euchlana Luxurians*), “Delft” grass (*Andropogon Schoenanthus*) and different varieties of the cow pea. Teosinte and Delft grass were of course grown only as fodder plants. The yield of the former was at the rate of 15 tons per acre per cutting, or, if five full cuttings could be counted upon in the year, the enormous annual yield of 75 tons per acre. It should be stated, however, that the soil on which the teosinte was grown was a rich black mould. On a poor sand the crop made little growth without manure, and was almost killed out during the dry season.

Sore eyes in cattle.

The following, considered an excellent remedy for sore eyes, appears in the *Cape Agricultural Journal*:

Sulphate of Zinc, *three drachms*, Liquid Extract of Opium, *three ounces*, to be mixed in *twelve ounces* of rain water.

One ounce of the mixture to half a pint of water; of this two ounces to be syringed (a small glass syringe is best) into the eye.

A correspondent writes: I have used the above for two seasons and find it an unfailing remedy. This season out of thirty head treated, only two or three required a second application. If possible, keep the affected beast (with me mostly young cattle) separate from the herd, as it is very contagious.

“THE COLOMBO AGENT.”

(Air, THE V. A.)

The dear Agent.

Should you chance to own a Totum, and be looking round to see Where you may get an Agent who will ship or sell your tea, Of the many clever gentlemen who in Colombo dwell; You'll find one who'll do your business, and do you too as well. He'll pocket all the discounts upon everything he buys, While the highest market prices will be charged for your supplies. And with return commissions and some other little “likes” You'll find he'll leave you standing, and just have you when he likes. Should you wish some cash to borrow, why he'll put the matter right, And express how great his sorrow that the money market's tight. But, when you've signed his mortgages, you'll very soon repent, For he'll raise the usual charges up until they're cent per cent. You may work both night and morning, but no matter how one toils, Like a cruel boa constrictor he will crush you in his coils; For his methods are so wily, and his “kanackes” so abstruse, Though the planter plucks the orange, 'tis the Agent sucks the juice. But if, by great good fortune, you should through your troubles steer; When you've paid off all his mortgages, and once again stand clear; You'll find a pleasant greeting where you had to face a frown, And he'll call your kind attention how he's cut his charges down.

UP-COUNTRY

In the *Times of Ceylon*.

Caterpillars and Rhea.

A planter who some years ago was intimately concerned with the Rhea experiments in the Wynaad, writes us that with improved and cheaper methods of extracting the fibre now in vogue, he can see no reason why it should not become a great industry in India. Touching on the “caterpillar plague,” this pest was easily stamped out as long as the land was kept in cultivation. All that was really necessary was a certain number of watch coolies, who directly they saw a patch of a yard square, went to the spot and crushed

SHORT ADVERTISEMENTS.

NOTICE.

THE cost to subscribers of short advertisements is One Rupee for every three insertions of five lines or less. To non-subscribers a charge of Two Rupees will be made.

N.B.—Advertisers should state exactly the number of insertions required, failing this the advertisement will continue running until stopped and will be charged for accordingly.

OFFERED.

Good Coffee Seedlings.

About one lac of Coffee Seedlings from my seed available at once, delivery Ootacamund, Rs. 7 per 1,000.

L. W. GREY,
Pykara, Nilgiris.

Horses.

FOR SALE.—“Premier” Ch. Arab horse, very quiet in side saddle and trap horse, but not driven for 4 years; 14 to 14-2 hds.; good traveller.

“General” splendid hill horse, good pacer, easy and good traveller, bay B. Gelding; about 14-2 hds.; both sold for no reason other than horses no longer required.

Reference to Bangalore Veterinary if required.

Apply to H. COCKERTON,

AMMATTI,
South Coorg.

Teosinte, Jams, &c.

FOR SALE.—Teosinte seed per lb. .. Rs. 5.
Salt bush 5.

The latter is excellent for feeding cattle; will grow in poor soil; seed very light.

Also Preserves.

Brazil Cherry Jam per lb. ...	Rs. 0 8 0	These are sold at 6 ans. a lb. if taken in bulk, tins of 10 to 15 lbs. each.
Peach	0 8 0	
Guava Jelly	0 8 0	
Loquat	0 8 0	
Peach Cheese	0 12 0	
Apricot Jam	0 10 0	

Apply TEOSINTE,
C/o this Paper.

OAKLANDS COFFEE ESTATE DAIRY, 600 ACRES.

European Dairy.

To open on 1st March 1897. Under entire European management and with most improved machinery. Butter under guarantee for quality, Re. 1 per lb.; or if in quantities of 10 lbs. and over, annas 14 per lb. Orders are being registered.

J. PARTRIDGE,
Proprietor.

Lourdes Estate.

FOR SALE.—Four miles from Yercaud, Shevaroy Hills, on the slopes of the Shevaroyan, the Lourdes Estate, with 2 acres coffee and fruit trees. Total acreage 41 acres.

Apply to KUMMERGODE,
C/o this Paper.

Mounted Photos.

FOR SALE.—One lot of Cabinet-sized Photographs, mounted, comprising the leading Authors, Actors, Actresses, Speakers, &c., of the day, all by W. and D. Downey, London. The lot consists of one hundred (100) photographs in splendid condition for Rs. 20. It is a bargain.

Apply to “DEMON,”
C/o this Paper.

Ulmer Dogge.

FOR SALE.—A big “Ulmer Dogge” slut, imported from Europe, Rs. 300; also 4 Pups by same, not pure breed, 5 months' old, Rs. 50 each. Open to offers.

For further particulars, apply to

TH. SCHLUNK,
Feroke.

Attakhan Cadoo Estate.

FOR SALE.—Attakhan Cadoo Estate, Coffee 100 acres, Jungle 87.

Apply L. A. WAUGH,
Verarajendrapett, L. Coorg.

Bullock power.

FOR SALE.—A Bullock Power (2 pairs), quite new. Open to offer. Apply to

H. CALIFFE,
Belagolli P. O.,
Hassan District.

u/c.

For Sale.

A Battery by Casells of Paris, with extras, to be attached to a rifle or gun for shooting Tigers at night. Never been used. Cost 200 Rs. Price Rs. 150.

Graft apples and pears of the best kinds. For particulars apply to

WRITER,
Rudder Grange, Ootacamund.

Coffee Shade Tree.

Sun-dried Erythrina lithosperma contains per ton:—

61.50 lbs.	Nitrogen
57.38	„ Potash
14.92	„ Lime
13.68	„ Phosphoric Acid.

Orders should be booked early for the present crop of seed from the parent trees of above analysis. Price Rs. 3 per 1,000.

This variety is the only thornless kind extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE,

SHENCOTTAH,
Tinnevely.

u. c.

Ittithorai Coffee Estate.

FOR SALE.—The Ittithorai Coffee Estate above Kullaar Railway Station on the Nilgiri Railway. Elevation 3,000 feet; 68 acres land, of which 20 in Coffee. Planted 1890. Looking fine for next Crop. Price Rupees 10,000, of which one half can be secured by a Mortgage on the property.

Apply T. BROWN,

Six Feby.

Coonoor.

For Sale.

A small coffee property in Mysore, with a block of good jungle.

Apply “PHELM,”

Five.

C/o Manager.

TO PRODUCE HOLDERS.

Loans.

Loans on Estates and Crops arranged. Low interest.

Address, “FIRM,”

u. c.

C/o Manager this Paper.

Tea Estate.

FOR SALE.

PRICE RUPEES 30,000.

The Carolina Feliastowe Tea Estate.

Situated 1 mile from Coonoor, S. W. of the Bridge on the Bridle path to Ootacamund. Consisting of a large Bungalow of 13 Rooms (4 Bed, 4 Bath, 1 Dining, 1 Sitting, 1 Store, 1 Maistry, 1 Extra.) A detached Cottage, Cattle shed for 30 Cows, Kitchen and 2 Godowns, 7 Servants' Godowns, 1 Coach house and Stable. A smaller Bungalow of 5 Rooms, Cow house, etc. A Tea house 60 feet X 12 containing 1 little Giant Tea Roller, 1 Withering Rack of 13 Trays each 24 X 8 feet well and newly fitted up with Hessian Tatts complete. 1 2-H.P. Engine and Boiler to drive Roller, 1 Flue with Trays complete for Tea drying. A good Pulper in first rate order. 40 acres of Tea, Half 20 years old, Half 3 years old. 7 acres of Coffee, 2 full bearing, 5 young. 30 acres of Gums, 7 to 10 years old. 6 acres of Fruit, Manipuri Seed Tea trees, etc. 70 acres of Jungle and Scrub, 20 suitable for Coffee. Rest suitable for Tea. 153 Total acreage.

Apply T. BROWN,

Six Feby.

Coonoor.

Tea land, &c.

Tea land at high elevation, also coffee land, for sale, or partnership to open. Particulars to

T. C.,

u. c.

Editor of this Paper.

PHELPS & CO., 15, Old Court House Street, Calcutta, will be glad to send to any address particulars and illustrations of their Riding Habit “Ideal” Riding Breeches, “Acme” Trouser Belt, “Cycling” Scarf, “Muskil” Bow, and “Jemizone” Knot; all patented.

To Small Capitalist. FOR SALE Rs. 6,000.—A newly-built brick Mangalore Tiled Bungalow, in about 50 acres of land, suitable for fruit growing or coffee cultivation under shade. Rain-fall 80 inches. Only 3 miles from Taluk Headquarters, Govt. Dispensary and Post and Telegraph Office. A good road leading to bungalow only $\frac{1}{2}$ mile off Government Road.

Apply sharp BUNGALOW, EDITOR, "Planting Opinion," Coonoor.

English Home and Education. A lady living at the seaside, in the healthiest part of County Cheshire, with her three daughters, who have had highest certificated education, are willing to receive and educate English children, either boys or girls, any age up to 12 years.

A thorough knowledge of English, French, German, Music, Drawing, Dancing imparted to the pupils.

Young and delicate children most conscientiously looked after. Terms and particulars on application to

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Z. Z., C/o Manager.

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St. Leonards on Sea, Ancaster House.

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A Level. FOR SALE.—A level by Troughton and Simms, in case, with tripod and levelling staves. Complete and in good order. Price Rs. 300. Open to a reasonable offer.

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Five.

Coffee Estate. FOR SALE.—A valuable Coffee Estate, in a good district, 100 acres in bearing, 25 young, 55 acres now being opened, 300 acres forest.

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Apply T. BROWN,

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C/o Editor, P. O.

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Wooden Bungalow, &c. FOR SALE.—A wooden bungalow containing a quantity of weather boarding, rafters, door frames, window frames, doors, windows, &c.

Two Iron water-wheels. A quantity of powdered sulphur. A cash chest.

Apply P. GUARD,

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Apply 303, MANAGER, *Planting Opinion*.

There are so many cheap imitations of Ellwood's helmets in the market that it is a comfort to know that PHELPS & CO. keep Ellwood's only.

Good Land.

FOR SALE.—Block of 1,000 acres, situated in the best district of Wynaad for the early showers; average annual rainfall 80 inches, with an average in January, February and March of over 5 inches.

Government Road from Coast to Mysore bisects the Property which is moreover bounded on the North and West by large rivers, each containing ample power throughout the year to drive Overshot Water Wheels.

The greater portion of the land faces North, North-East, and North-West, with a very easy lay, and the soil is admirably fitted for the growth of Arabica and Liberian Coffee, as well as of Tea. For further details apply to 303, C/o MANAGER, *Planting Opinion*.

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Coffee Seed extraordinary.

After two years' careful investigation I have been able (by a process which I shall not, for obvious reasons, divulge) to produce a coffee seed containing the very excellent percentage of 7 per cent. of ash with the parchment, and 3.71 without, as compared with 2.6 per cent. of ash with and without parchment of the ordinary seed. The analysis was made by Mr. D. Hooper, of Ootacamund. Price Rupees Fifty per bushel, cash with order.

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Pykara, Nilgiris.

Bangalore Orchard.

FOR SALE £500 STERLING.—An orchard in good order within Civil and Military Station, Bangalore S. India, in a seven-acre block. Water available; containing a nice strongly built 8-roomed Cottage, with large outhouses and stabling for 3 horses.

Estimated annual rental value £18. Fruit and other crop return £18 per annum.

Further particulars, apply

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Sirocco. Wanted to purchase a small second-hand Sirocco in good order. Send full particulars and price to ALPHA B., C/o *Planting Opinion*.

Six.

Partner. WANTED.—A Partner to extend existing Tea and Coffee. Good District, many facilities.

PARTNER, C/o MESSRS. BURNETT & SON,

Calicut and Tellicherry.

u/c.

Sambur and Bison horns. Wanted few pairs large horns. Particulars and price to "S. S. S.,"

C/o EDITOR, "Planting Opinion."

Seven.

Cook. WANTED.—A Cook for Bachelors' Bungalow. Second Servant kept. Salary Rs. 12 or 13 according to qualifications.

Apply

u. c.

Q., C/o P. O.

NILGIRI DISTRICT PLANTERS' FAMINE RELIEF FUND.

Famine Fund. This fund has been opened as a branch of the fund started by the United Planters' Association of Southern India. Subscriptions (monthly) or donations are earnestly asked for from all residents in this district. Remittances should be sent to Hon. Secy., Nilgiri Planters' Association, Hon. Mr. H. Percival Hodgson, Kullakambay; Henry Wapshare, Esq., Guynd P. O.; L. W. Grey, Esq., Pykara; L. C. Liebenrood, Esq., Nellacotta.

E. G. WINDLE,

HON. SEC., N. P. A.

Apl.

Bobbery Pack. WANTED dogs for a bobbery pack. Tongue essential.

Apply A. H. SHARP,

u/c.

Devikulam.

all the tiny caterpillars that had been hatched that day. Perhaps there would be but one such spot in ten acres, and it could be seen 100 yards off. But if left for a few days they would spread over an acre or two, and of course be very difficult to exterminate. Three watch coolies were amply sufficient for 100 acres to keep them entirely in check in their first stage. In any case they never destroyed the roots, only that particular crop of stems attacked, if they were allowed to spread and grow to maturity. Further, the pest was only observed at one time of the year, and never destroyed even one full crop of them.

The Kola nut. Most of our readers are familiar with the name of this product, and we have done our best to arouse a practical interest in its cultivation by distribution of seed and diligently publishing all the information we could collect concerning it. Briefly, it will grow anywhere where Liberian coffee will grow, but the hotter and moister the climate the better. The trees are planted from 10 to 20 feet apart. The returns compare favourably with even the best of coffee land. The chief difficulty hitherto experienced in India was the enormous price demanded for the seed by the few firms from whom it was obtainable. We are glad to announce that the great colonial seedsman, Mr. Thos. Christy, states in reply to a query, that he can deliver a basket of about 100 lbs. f.o.b. London for about £6. As perhaps ten nuts go to the pound, this counting freight, makes the cost per hundred about Rs. 12-8-0 on the estate. Allowing 400 trees per acre, and the liberal margin of 25% for failures in germination, the initial cost in seed runs to about 60 rupees per acre. If half a dozen men clubbed together, it would probably come a great deal cheaper. We have an idea that the kola plants might be first put out tentatively as a species of shade tree among the coffee itself, say at the rate of 100 trees per acre.

Planters and the Queen-Empress. The President of the U. P. A. S. I. has proposed (*vide* circular below) to the members of the Committee that their Association should present an address of loyal congratulation to our Queen-Empress on her long and glorious reign. We trust the Committee will accept it *nem con*, as it would be a slur on the loyalty of the great Planting Industry of Southern India were such an auspicious occasion to pass by unnoticed. Many of our readers, we know, think it all "bunkum," to put it tersely. With these, sentiment is out of place. So we would urge the practical business value of South Indian planters taking part in each and every such public demonstration. One of the immediate ends which far-sighted members of the community have in view, is to impress on all and sundry the fact of its existence, a fact of which very few outside Southern India are aware of. There are not many nowadays who deny the value of advertisement, if a case in point is needed: look at Ceylon. *Verbum sap.*

PEERMAAD, 18th February 1897.

GENTLEMEN.—As the Queen-Empress this year completes the longest, most admirable and most glorious reign on record in our history, and as the occasion is being made not merely a National Holiday but the opportunity for every public body of any importance to testify its loyalty, it has occurred to me that the U. P. A. S. I., the representative of the largest Industry in South India, should not be behindhand.

I propose, therefore,
(1) That an Address in a suitable casket be presented by our Association;
(2) That the Hon'ble Mr. Hodgson and Mr. Ormerod be requested to draw up the address;
(3) That Messrs. P. Orr and Sons be asked to design a casket and furnish estimates for same;
(4) That all expenses be met out of the Reserve Fund.
Trusting that this will meet with your approval, and requesting the favor of an early reply,

I am, Gentlemen,

Yours faithfully,

(Signed) GRANVILLE L. ACWORTH,
Chairman, U. P. A. S. I.

THE FAMINE FUND.

As will be seen from the subscription list published below, the Nilgiri planters have responded in a very ready manner to the appeal made them, and we hope to find a generous circulation between the various districts of South India in furthering this praiseworthy object.

We greatly regret to state however that a by no means inconsiderable minority is strongly averse to contributing to the Fund in any manner whatsoever. The reasons given are two-fold, both of a selfish nature. The first is perhaps the meanest: Why should planters bother themselves at all in the matter, as such abundant funds are pouring in from all over the world? Quite so, let us shirk our duty by all means, if we can get others to do it for us! Our prosperity is bound up in the welfare of this country, and altogether apart from sentiment, it is very short-sighted policy that bids us withhold help from the people and Government of this land when they are in such bitter straits. The other reason is that of short crops and consequent poverty. That these causes should restrict the amount of our individual subscriptions is natural, but that they should stop them altogether is to hold that charity should only be given out of our abundance, and only at such time where the gift is not felt. We venture to define charity in a somewhat different way.

A striking contrast to the above sordid reasons for withholding help to the starving masses of Upper India, is shown by "Bet's" suggestion in our correspondence columns: that the coolies as well as their employers, the planters, should be asked to give their mite.

FROM

THE HONORARY SECRETARY,

Nilgiri Planters' Association.

List of Subscriptions and Donations received to date for the Nilgiri Planters' and District Famine Fund.

Name.	Donation or Subscription	Amount.
		RS. A. P.
"Coonoor Planter,"	Monthly Subscription	.. 5 0 0
W. Rhodes James, Esq.,	Donation	... 200 0 0
W. L. Edmiston, Esq.,	do.	... 25 0 0
W. Rowson, Esq.,	do.	... 25 0 0
C. E. Martyn, Esq.,	do.	... 50 0 0
Thomas Murray, Esq.,	do.	... 10 0 0
Hon'ble Mr. H. P. Hodgson	do.	... 200 0 0
E. G. Windle, Esq.,	do.	... 20 0 0
E. R. Kindersley, Esq., and } G. Compton Esq.,	do.	... 20 0 0
A. N. Groves, Esq.,	do.	... 50 0 0

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Name.	Donation or Subscription.	Amount.
		RS. A. P.
R. E. Gompertz, Esq.,	Donation	5 0 0
R. E. Gompertz, Esq.,	Monthly Subscription	2 8 0
I. G. Vernede, Esq.,	do.	2 8 0
Do.	Donation	5 0 0
G. Oakes, Esq., and	Monthly Subscription, January	20 0 0
W. Oakes, Esq.,	and February	150 0 0
"Woodlands" Estate,	Donation	80 0 0
Mr. and Mrs. Harding Pascoe,	do.	50 0 0
B. A. Marden, Esq.,	do.	10 0 0
F. T. F. W.	do.	5 0 0
R. Congreve, Esq.,	do.	20 0 0
A. M. Kinlock, Esq.,	do.	2 8 0
Do.	Monthly Subscription from 1st Mar. 1897.	100 0 0
James Stanes, Esq.	Donation	...
Total		1,057 8 0

KOTAGIRI,
February 28th, 1887.

E. G. WINDLE, Esq.,
Hon. Secy., N.P.A.

THEORIES BY A NEW HAND.

DISPOSAL OF PRUNINGS.

AN article that lately appeared in this paper on "Prunings and Disease Germs" contained without doubt much sound advice, but it will be long, I fear, ere the advice given will be acted upon. If we could find a profitable use for prunings as suggested, a great impetus would be undoubtedly given, but, but! Failing that, it has struck me the difficulty could be partially disposed of at least by *deep* burying. Not in the usual shallow trenches of one and a half foot deep or less. No, but in trenches from two and a half to three feet deep. That is to say, to bury the prunings at such a depth that they will never be likely to be disturbed again in the ordinary operations of plantation culture. On an average coffee or tea estate, one such trench every 20 rows would probably suffice, in other words it would be twenty years before the trench would be again opened, ample time I should fancy for the destruction of all vitality in the wretched germs. Besides, there is every likelihood that long before that time, a profitable use would have been discovered for them. Burning them is doubtless more thorough, but the expense is, as it were, all devoted to the single operation of destruction.

This is far from the case in my proposal. Modern planters are generally agreed on the great importance of aerating the soil. They only differ on the methods to attain that result. Some dig renovation pits, which in reality cause more damage than good, as the moisture collects in the pit even after being filled in. And there being no outlet, it stagnates and intensifies the very evil the pits are supposed to combat. Others advocate shallow trenching, which, as far as the top soil is concerned, is undoubtedly excellent. But as the trenches are "broken" every few yards, accumulation of moisture results, also in this case with undesirable results. For it stands to reason a soil in which the moisture can only escape one way, *i.e.*, by evaporation, must always remain sour, no matter what kind of surface cultivation is given.

The deep 2½ to 3 feet trenches I advocate would run at a gentle slope, say one in 30 or 40, across the slope, and carry away all excess of sub-soil moisture. The prunings and handlings thrown in would effect much the same purpose as drain pipes in English agriculture; in fact, when covered in again, would form a series of excellent sub-soil

drains. It has been ably pointed out to the readers of your paper that the great quantity of iron present in the coffee, and also I suppose tea, soils of Southern India render their thorough aeration a matter of great practical moment. Now these deep drains would allow the rains to soak into the land, and to gradually find a passage by percolation through the prunings at the bottom of the trench or drain. Where water has effected a passage—not at the entrance, merely—air follows in its wake, and the process of aeration is accomplished.

The large tap roots or water-roots can, in times of drought, travel down to a great depth, and the more porous the soil, the easier is their work accomplished. The better drained a soil, the more equable its percentage of moisture, and, consequently, temperature. A hard undrained soil is sodden with water in the rains, and baked hard in the hot weather. Both of these conditions are fatal to the successful growth of plants.

I have endeavoured to point out a moral I always try to keep prominently before me: never view any single plantation work solely from its own particular stand-point. Endeavour rather to make it dove-tail into another portion of the work.

WARRANTS UNDER ACT XIII OF 1859.

SOME six or seven weeks ago we published an abstract of a G. O. regarding warrants issued under Act XIII of 1859, which showed that the Government of India had raised a point of very great interest to the planting community. Briefly, the Government of India expressed a doubt whether the provisions of the Code of Criminal Procedure 1892 regarding warrants, apply to warrants issued under Section 1 of Act XIII of 1859, and whether a warrant under that Act can be executed at all outside the jurisdiction of the Court which issues it. Not stopping here, the Supreme Government requested the Madras Government to have proceedings for the issue of such warrants very carefully watched, and to take the earliest opportunity to move the District Magistrate or the Sessions Judge, as the case might be, to call for the record in any case of the kind, and refer the matter to the High Court under Section 438 of the Code, the necessary measures being taken to have the question fully argued before the High Court and the result reported for the information of the Government of India. That is to say, it was virtually ordered that the point raised be referred to the High Court for an authoritative ruling; and certain observations passed by the Government of India showed that the step thus taken was one of very grave import to planters. In the first place, that Government committed itself to an assertion that "though a warrant may issue under Section 1 of Act XIII of 1859, no 'offence' has been committed until the Magistrate has made an order, and that order has been disobeyed. This is a statement that is at least open to challenge. Secondly, the Government of India observed, "on grounds of administrative policy it is clearly inexpedient that the very special procedure provided by that Act" [XIII of 1859] "which applies in certain cases penal provisions to the breach of a civil contract, should be capable of being employed to drag labourers many hundred miles from their homes to answer a charge of such breach, and if it should be decided that the existing law permits of such proceedings, it will be necessary to consider the propriety of amending it."

These remarks have caused the planting community in the Madras Presidency considerable uneasiness. The Hon'ble Mr. Hodgson lost no time in pointing out to his fellow-planters and the Local Government that any ruling in support of the Government of India's view of the matter would practically render Act XIII of 1859 nugatory as regards the protection of planters against breach of contract on the part of maistries, coolies, &c. For months if not years, past the planter has been crying out for more protection in this matter. Yet he is now threatened with deprivation of even the small and unsatisfactory measure of protection hitherto accorded to him. Fortunately, the Government of Madras is more sym-

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made Seeds.

WANTED Shade Seeds, fresh, of Silver Oak, Albizzia Moluccana and E. Lithosperma.

Apply to

"HAICH," C/o Editor, "Planting Opinion."

ilgiri Tea Estate.

WANTED to lease for a term of years, or buy managing share, in a small tea estate on the Nilgiris.

Apply NILGIRI TEA,

C/o Manager.

etter Press.

WANTED a second-hand screw letter press, in good order. State price delivered at Railway

PRESS,

C/o This Paper.

WANTED to purchase in Mysore a small estate under 100 acres or managing share of same.

Particulars to "P.,"

C/o Manager.

Medical Practitioner.

WANTED.—By the South Travancore Tea Company, Limited, a medical practitioner for the Kalthurthy Valley Hospital and Dispensary. Applicants must hold a diploma of, or equal to, a Madras Hospital Assistant. Apply to MANAGER, S. T. T. COMPANY, LIMITED,

KALTHURTHY.

Tinnevely District.

BILLET REGISTER.

ANY subscriber wishing to secure a billet, or desirous of a better one in want of a manager, assistant, or writer, &c., is entitled to insert an advertisement to that effect free for as long a period as desired. These advertisements will appear on this page. Non-subscribers will be charged the small fee of one rupee.

To be worked in conjunction with the above, we have established a register, and names will be entered on application, together with copies of their testimonials. Thus should any enquiries be made for the services of a manager, assistant, &c., the names and testimonials will at once be forwarded, saving delay and trouble. Subscribers may have their names entered free; others will be charged a fee of one rupee.

BILLETS OFFERED TO.

Writer.

Wanted a Writer for Field work only, must have a thorough knowledge of coffee, keep a rough roll, and have a good labour connection. None need apply unless they have the latter. Apply A. MORGAN, Kil Kotagiri, Nilgiris.

Eight.

English Graduate.

An English graduate and the son of a General Officer desires an engagement. Address

No. TEN,

Five.

C/ of this Journal.

Field Overseers.

Field Overseers from November 1896 in opening new clearing. Salary Rs. 20 to 25 per mensem.

Natives only need apply..

Apply to A. H. SHARP, Esq.,

Devikulam.

Coffee Writer.

Wanted on a Coffee Estate an Under-Writer who understands field work and accounts. Must be young, active, and willing. Must speak and write English well.

A labour connection is necessary. No one without these qualifications need apply. Good salary.

M. A. T., C/o this paper.

BILLETS WANTED BY.

Field Writer.

WANTED.—A Field Writer for a Tea Estate in a healthy district. Salary Rs. 30/- and Cooly.

u. c.

Apply TEA,
C/o Manager, P. O.

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man.

WANTED—Employment by a European gentleman of experience, on a Coffee Estate. Willing to start on small salary. Has good knowledge of Tamil, Canarese and Hindustani.

Apply to "EPAMINONDAS,"

Eloven.

C/o this Paper.

Manager.

WANTED a situation of trust as manager by a European Gentleman with over 10 years' experience in Coffee or Tea. A temporary billet for say 6 months, Rs. 400; permanent Rs. 250 per mensem at first.

Apply F. O. B., C/o Manager.

By young European
Planter.

WANTED employment as Manager or Superintendent of a Coffee Estate. Five years' practical Experience in South Mysore. Excellent Testimonials. Salary Rs. 150.

Apply E. P. L.,

C/o Editor.

Young Tea Planter.

WANTED position of Trust or Assistant on a Tea or Coffee Estate in S. India. Has had two years' experience in Assam. Is willing to work 6 months without a salary till he has learnt local conditions. Good references.

"A. K.,"

u. c.

C/o Editor.

Tea or Fruit.

WANTED an appointment as Manager or First Assistant in tea or fruit. Ten years' practical experience, well up in the cultivation and manufacture of tea, and also in the management of English fruit trees. Bachelor, age 29, active, hard working, sober habits, excellent testimonials and information from the Manager of this paper. Can join at once.

KUMA.

Coffee Planter.

WANTED a situation in Coffee as Superintendent or Manager by a European with over twenty years' experience.

u. c.

Apply D.,
C/o Manager.

Superintendent.

WANTED a billet as Superintendent of a Coffee Estate by a planter of 14 years' experience; testimonials and references given if required.

u. c.

Apply PADDY,
C/o this Paper.

Tea Planter.

In 5 to 6 months time by a Managing Proprietor about to sell property, an appointment as Superintendent of a Tea Estate or a large tea house preferred. Mincing Lane and Assam experience. Command of Labour.

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BRASS SEALS FOR WAX SEALING,

MONOGRAM, CREST OR ADDRESS DIES,

ENGRAVING OF ANY DESCRIPTION.

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ESTATE REQUISITES.

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A quantity of Mining Plant and sundries on hand for sale. A printed list giving details and values will be forwarded on application. Open to inspection and offers.

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14 Billiter Street, E.C.

ic, and, one or two cases having been referred to the High Court, the Local Government has evinced a desire to give the P. A. S. I. every facility to appear by Counsel in order to argue cases from the planter's point of view. If the High Court persists in this, as it is practically certain to do, no ruling will be given. Arguments on both sides have been duly weighed. But it is important to note that this ruling is not in any case likely to be regarded as final. A decision adverse to the planter cannot be easily submitted to by him, to whom it will mean not simply a refusal to grant what he considers a reasonable request for more protection, but an almost entire withdrawal of the little he now has. On the other hand, if the view of the planter is upheld, steps will doubt be taken to "amend" the law in accordance with the decision thrown out by the Government of India. In either event, therefore, there would seem to be further trouble and discussion ahead. Yet it is well that the point now raised should be fully argued out, and it is to be hoped that the High Court will recognise this. The Government of India itself has expressed a desire "to have the question fully argued before the High Court," and in this at least, the planting community are at one with the Government of India. The result of the reference will be awaited with no little interest. Meanwhile, as the matter is *sub judice*, we refrain from expressing any further opinion on the point at issue.—*Madras Mail*.

SCIENCE AND SOILS.

THE following extracts are from an extremely interesting series of reports issued by the Hawaiian Sugar Planters' Association, referred to in our last issue:

"On Hawaii, it is less necessary to compare upper and lower lands in order to illustrate the action of rainfall upon the lime, potash, and nitrogen contents of the soils; we have an illustration, on a large scale, in the comparison of the soils of the respective districts. In the whole of analyses the nitrogen is found to rise with the increase of rainfall from Kohala to Hilo. In Kau the climatic conditions resemble those of Kohala, and as the nitrogen in the soil is of organic origin, and controlled by the rainfall, the amount in Kau soils corresponds to that in the soils of Kohala. On the other hand, the lime, also the potash, gradually fall as we proceed from the dry to the wetter districts. The lime contents of the Mauna Loa soils, including those of the wet locality of Waiakea and the dry district of Kau, will require special consideration, for reasons of a geological nature already suggested, so soon as more ample data are obtained."

Touching on the physical character of the soil, also largely controlled by rainfall, it is shown that in a dry climate the soils are granular and rough. In a wet climate, the action of rain, humus, and plant roots, result in an abundance of fine soil.

Generally speaking it was found that the power of soils to retain moisture was in direct ratio to the nitrogen they contained. The Hawaii soils, by the way, are extremely rich in nitrogen, being as high as 647 per. cent. in the rainy districts, or say more than equal to unusually excellent cattle-manure! Naturally such an excess of humus resulted in the soils being charged with excess of moisture.

In some interesting remarks on the manner in which ploughing or stirring of the soil should be accomplished, it is laid down as an axiom that the shallower the surface soil, the shallower should be the cultivation. In other words, that though stirring the subsoil is always good, it is a dangerous proceeding to bring it up to the surface, unless the surface soil is exceptionally rich. Wherein lies a great moral to planters. In forking, for instance, in poor soil, never try to turn up sods. Merely *loosen* the soil, do not mix it. The crude subsoil contains plant-food in a state unfit for plant-consumption, and in iron soils often in a state positively dangerous. Trenching poor soils would

thus seem the reverse of wise. This fact is one well known to all modern farmers, but few planters are aware of it. Follow nature. Improve and deepen your soil *from the top*, and not from the bottom. Deep draining is of course quite another matter. The effects on the "nitrifying poochie," of which we have heard so much, is bad.

The nitrifying organisms exist chiefly in the upper or surface soil, and their number falls off with the depth, until at a certain level no more are found. The depth at which these organisms are found, and operate, varies with the nature of soils. In deep, friable and porous soils, which admit water and air freely, and in which plant roots penetrate far and readily, the organisms are found at lower depths. It is otherwise with lands covered with a thin surface soil, and a crude and impervious subsoil; and upon which plant growths root very shallow. It may be found that the color mark, which indicates the depth of vegetable decay, is a gauge of the depth at which the organisms exist and operate; for, as their action is upon the organic matter, their sphere will be limited by the depths to which vegetation descends. If then, thin soils, having a shallow vegetable growth and in which the nitrifying organisms are located near the surface, are suddenly plowed to a great depth, and turned over with a wide, flat furrow, it appears probable that these organisms, and the organic nitrogen that they are to prepare for the use of plants, are turned down to a depth at which the physical conditions are not favourable to nitrifying activity. Two examples have come under our personal notice on these islands; one of them where a thin soil was plowed by steam far below any previous depth, and the other a mauka (dry) soil plowed by oxen, where the subsoil was turned up and laid upon the furrow of surface soil. In the latter case the manager informed us that the land had "laid out of use" for several years; and similar but less durable effects resulted in the former case.

If planters could afford to wait say a year or two after felling and clearing, much of course could be done to improve the soil by deep trenching, as will be seen from the following remarks:—

"Breaking up and stirring soil and exposing all parts of its mass to the atmosphere, enables the oxygen of the air and the great heat of the sun to act upon the organic matter, which, either by direct oxidation, or the provision of conditions conducive to the action of ferment organisms in earth, becomes broken up, whereby the insoluble nitrogen of albuminoids and humus is converted into ammonia and finally into nitric acid, the carbon and hydrogen of the organic matter at the same time uniting with the oxygen to form acids and water. This action is most plainly seen upon decaying leaves lying in exposure to the sun, moisture and the air. The air acts not less potently, though more slowly, upon certain of the mineral bodies in soils. Several of the soil minerals (we have special reason for selecting iron as an example) unite with oxygen in several different proportions, and the proportion of oxygen combined with the iron at any given time depends upon given conditions, which are causing the proportion to vary more or less. The iron, especially in our thin, raw, and badly decomposed soils, is, in large part, combined with a low amount of oxygen; but, because of the great avidity of iron for oxygen, as soon as the low oxygen iron compound is exposed to the air it takes that element to full saturation, and can fix no more. Let this highly oxidized iron however be turned under and hidden from the air, and more especially if the soil becomes covered and filled with vegetation, caused by excess of rainfall, and it will gradually give up a part of its oxygen. Organic matter is a great reducing agent, taking oxygen away from metals. Our method of determining glucose in the sugar house rests on this fact. Glucose sugar is an organic body, and when it comes in contact with the copper in Fehling's solution it takes part of the oxygen away, leaving the metal with a lower amount. We may express the relations of iron and organic matter in the soil in an opposite way, and say that iron is an *oxygen carrier*, taking the element from the air and holding it in the soil, until given up gradually in oxidation of the organic matter. Iron and other bodies are believed to perform the same function in the animal body; taking the free oxygen inhaled and distributing it by the blood circulation throughout the body, where it comes in contact with the organic matter of food and is used in its combustion. The blood leaves the lungs charged with oxygen and returns from the

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circuit of the body deprived of the element. In the oxidation of the organic matter in the soil acids are formed, which the iron, robbed of its oxygen, seizes greedily. The low iron oxyd also unites with mineral acids in the soil, such as sulphuric, with which salts are formed actually poisonous to plant life. These facts control our advices in selecting fertilizers for certain lands; we hesitate to use sulphates in certain soils, as in given localities we exclude chlorides. Following then, is a rapid means of conveying oxygen to the soil; and to soil at a greater depth that can be done in plowing for immediate planting, because the raw soil brought to the surface undergoes thorough oxidation during the long period of exposure to the air. As a result, the organic matters are changed into more soluble forms; the low oxygen iron compounds are broken up, and the iron charged with larger amount of oxygen for future use. The practical benefits are a greater depth of soil staple; the soil has been filled with combined and free oxygen and rendered capable of receiving the air more freely; the earth is sweetened and freed from the sourness caused by decay of vegetable matter in the presence of excess of moisture; the elements required by the cane are increased in available form, and by the combined action of the air, sun, and moisture a decomposition of the coarser soil particles is largely obtained. Against these benefits must be placed the danger of loss of plant food, such as nitrogen, by converting the inert soil matters into more soluble forms."

SANSEVIERIA ZEYLANICA.

(BOW-STRING HEMP.)

[Dictionary of Economic Products, Vol. VI., Pt. II., S. 785.]

[REPRINTED FROM THE "AGRICULTURAL LEDGER," 1896, No. 30.]

MURVA FIBRE AS A SECOND OR CATCH CROP FOR TEA PLANTERS.

Result of Examination of a Sample forwarded to the Imperial Institute; Commercial Valuations obtained thereon; together with Review of the Correspondence by THE EDITOR; and a Note on Cultivation by a West Indian Planter. To which is prefixed an Account of the Plant and mode of preparing the Fibre.

Introductory.

The object of the enquiry indicated in the correspondence herein briefly reviewed is to discover a plant that might be profitably grown as a second or catch crop on those portions of Tea Estates not required or not suitable for tea. It is universally admitted that such a crop is much needed. Considerable attention has of late been given to the subject with the result that *Murva* fibre (SANSEVIERIA ZEYLANICA), or as it is known in trade Bow-string Hemp, may possibly come to be so cultivated.

The correspondence under review may be suitably prefaced by the following account of the plant and its fibre taken from *The Dictionary of Economic Products*.

The Bow-string Hemp (SANSEVIERIA ZEYLANICA) plant is a stemless bush with perennial roots, and a rosette of six to eight succulent, radical leaves, the inner of which are often four feet long, and end in a long straight spine, the scape or peduncle, one to two feet long, rising from the centre of the leaves. Flowers racemose, greenish-white, erect, four to six together in clusters. It is found on the eastern coast of India from Bengal to Madras; common on the

Habitat.

Coromandel coast, in Cumbum, and in the Dindigul district. It is stated that in Malabar of which country it is a native, it does not produce seed. In India it may be said to exist under cultivation mainly. It is distributed to Ceylon, Java, and the coasts of China and Africa.

Fibre.

From the succulent leaves is extracted a fibre held in high esteem by the natives on account of its elasticity and consequent suitability for bow-strings. The fibre is used for the preparation of cordage and matting in the regions where it occurs, and is much valued in Europe for ropes used in deep sea dredgings.

The fibre is pliant, soft, and silky, and much resembles that of the pine-apple. It is usually prepared by taking the fresh leaves and placing one of them on a smooth board which is raised at one end.

Mode of preparing the fibre.

The lower end of the leaf is then pressed down by the toe of the workman, who squats on the plank, and with a blunt knife or piece of iron plate scrapes upwards along the surface of the leaf and thus deprives it of its fleshy pulp by successive scrapings, turning the leaf over

and over, as may be necessary. When the pulp is thoroughly removed, the fibre is washed for three or four minutes, and dried in the shade. Washing in brackish or salt water, or continuous soaking in water, is said to destroy the glossy white appearance of the fibre. With reference to the strength of *Murva* fibre DR. ROYLE made some comparative experiments with this and AGAVE fibre, which showed that the two were about equal in strength. . . . The thread made from *Murva* fibre is sometimes woven into fine cloths which readily take on various dyes.

On the 20th December 1895 (letter No. 1880), the Reporter of Economic Products forwarded to MR. ROYLE, Curator, Indian Section, Imperial Institute, a small quantity of Bow-string Hemp or *Murva* (SANSEVIERIA ZEYLANICA) fibre. This had been received from

HONOURABLE J. BUCKINGHAM, C.I.E., of Amguri, Assam, through his Calcutta Agents, MESSRS. BEGG, DUNLOP & Co. The covering letter to MR. ROYLE stated that tea planters were anxious to have an auxiliary crop, and asked that a valuation of the sample might be obtained at an early date. The letter concluded by saying that if the report proved encouraging, endeavours would be made to procure a larger parcel so as to allow of a practical test. Also that any suggestions as to methods of separation of the

Imperial Institute. fibre, defects of present sample, etc., would be highly appreciated. About the same time the Reporter in a letter to MR. H. C. BEGG of MESSRS. BEGG, DUNLOP & Co., wrote:—I saw the plant growing while I was in Assam. Nothing could be simpler than the system of cultivation and method of separation of the fibre. If the price offered for it should leave a reasonable profit over and above expenses involved, I am disposed to regard this as by far the most promising auxiliary crop which the Assam planters could find. If the HONOURABLE MR. BUCKINGHAM could send me a much larger sample, it would be possible to obtain a definite valuation.

Reply was duly received from MR. ROYLE who forwarded the appended reports kindly obtained by him on the sample referred to:—

From J. H. CHRISTIE, Esq., to J. R. ROYLE, Esq., C.I.E., Curator, Indian Section, Imperial Institute,—dated 72, Mark Lane, London, E. C., 27th February 1896.

Yours of 24th and sample of SANSEVIERIA to hand. We value £16-17 per ton; but had colour been bright white instead of yellow, we should have put same £20 per ton. This fibre will sell easily; we shall be glad to see a trial shipment of 20 or 30 tons. The cleaning is perfect and cannot be improved.

From C. E. COLLYER, Esq., to J. R. ROYLE, Esq., C.I.E., Curator, Indian Section, Imperial Institute,—dated 155, Fenchurch Street, E. C., 23rd January 1896.

I have examined the sample of fibre described as "Bow-string Hemp," SANSEVIERIA ZEYLANICA. This specimen is inferior to the fibre obtained from the usual growths of SANSEVIERIA ZEYLANICA. It is less fine, more variable in strength, partly weak and brittle and of poor colour—these defects may possibly be owing to the fibre being overripe or from old stems—as it is too much like some of the Aloe fibres to realise its intrinsic value, and in the condition of this specimen it would not in the present low markets realise more than about £20 per ton in London, but when more carefully prepared and of the usual good strength and colour the value would probably be £25 per ton and upwards. A few tons carefully prepared should be sent to test the market.

From C. E. COLLYER, Esq., to J. R. ROYLE, Esq., C.I.E., Curator Indian Section, Imperial Institute,—dated 155, Fenchurch Street, E. C., 24th January 1896.

In continuance of my Report on the SANSEVIERIA ZEYLANICA fibre, and in reply to your questions of the 21st instant. The quality of the fibre would be much improved by the use of suitable decorticating machines, and so far as any fibre has come to market the best results have been from the improved "W. E. Death" machine which turns out about 6 cwt. per day of cleaned fibre at a cost at least as small as by any other system. Soil and climate have much to do with the quality of the fibre and also to have the right variety for fibre purposes of the SANSEVIERIA ZEYLANICA. The fibre may be packed in bales of about 3 cwt. each, moderately pressed; each head (or small bundle) tied round near the butt end with some of the fibre—the fibre must not be knotted or plaited but packed straight, to preserve the fibre from being discoloured; the fibre to be perfectly dry before packing.

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from MESSRS. SLANN & DAVIS, to J. R. ROYLE, Esq., C.I.E., Curator, Indian Section, Imperial Institute,—dated 51 and 52, Fenchurch Street, E. C., 29th January 1896.

In reply to yours of 24th instant (which we regret we have not replied to before) we have examined the sample of fibre you sent us and find this very similar to Aloe fibre, fair colour, good strength. We should value some at about £18 per ton up, we might even get as much as £20, but this is very uncertain in the present state of the market. Prices are at present lower than they have been for many years, but there is every prospect of an improvement before long, as the low prices have stopped the production of certain hemp (New Zealand, etc.) and Manila is very firm now with every prospect of higher prices. Of course it is very difficult to give an exact valuation on the small sample sent us; we would recommend you to let your friends to ship, say, 10 bales when we should be pleased to give the fibre a fair trial.

The HONOURABLE J. BUCKINGHAM, C.I.E., through MESSRS. BEGG, DUNLOP & Co., informed the Reporter that he regretted he would not just yet be able to furnish a larger quantity, but that he was extending the cultivation of the fibre as quickly as possible. Mr. ROYLE was accordingly informed (letter No. 1227—76, dated 29th April 1896,) that some delay might be expected before a large supply of the fibre could be produced. Copies of the correspondence and of the foregoing reports were then handed to MESSRS. BEGG, DUNLOP & Co. by the Reporter with a letter No. 951—76, dated the 2nd April 1896. In that letter the Reporter mentioned that a few tons of the fibre were required as an experimental consignment to test the market, and also for complete investigation by the Research Department of the Imperial Institute. The Reporter accordingly requested to be informed whether MESSRS. BEGG, DUNLOP & Co. would be prepared to entertain the idea, and added:—"It would seem desirable that you should go the length of purchasing a machine suitable for cleaning the fibre, and one of our correspondents, it will be observed, has suggested the one that is considered most suitable." The Reporter further stated that the purchase of a decorticating machine suggested.

That he had recently been urging to the attention of planters the claims of Rhea fibre for that purpose. There could be no doubt that there was room for both fibres, and that some districts might find the Bow-string Hemp more convenient and equally profitable to Rhea. These were fibres that would meet independent demands and could never enter into competition. It had been suggested that SANSEVIERIA ROXBURGHIANA might be found a better species than S. ZEYLANICA. Before direct steps were taken to lay out a plantation, experiments might be made on a small scale side by side with authentically named rooted plants of both forms. Very possibly these could be supplied by the Superintendent, Botanic Garden, Sibpur.

The HONOURABLE J. BUCKINGHAM, C.I.E., wrote under date 28th April 1886, through MESSRS. BEGG, DUNLOP & Co.: "It is very satisfactory to find the fibre so well spoken of, but it is quite impossible for me as yet to get any large quantity of it. It appears to me that the best thing I can do is to extend the cultivation of this fibre at first to about 5 acres, and then see what that area is capable of producing. I have enough at present (starting from a single plant only) to put out about one acre, and all the available shoots I am now cutting up and planting out."

The following Report on the sample in question was kindly furnished by SIR FREDERICK ABEL, BART., K.C.B., with Flying Seal letter No. 92, dated 11th June 1896. This Report gives the comparative results of examination of the fibre obtained in the Research Department of the Imperial Institute.

REPORT ON SANSEVIERIA ZEYLANICA FIBRE.

The fibre of this plant, which belongs to the natural order LILIACEAE is of a beautiful light colour and fine gloss. The staple is about four feet in length, of smooth well-formed threads.

It is so well-known now that Messrs. PHELPS & CO.'s prices, notwithstanding that they are considered high, are so much below those of London, that their trade is advancing by leaps and bounds.

Report of the Research Department.

The sample was obtained from Amguri in Assam, where Dr. George Watt, C.I.E., Reporter on Economic Products, observed that it was being grown upon waste land by a tea planter. Dr. Watt states that the plant can be grown without cultivation; if fragments of the leaves are scattered over the soil, each fragment takes root rapidly, and a good crop is yielded in a very short time.

Chemical examination shows this fibre to be of high quality. Mr. Cross (a member of the Committee of Advice) examined a sample of Sansevieria which was included in the collection at the Indian and Colonial Exhibition, and also tested its paper-making qualities; the chemical results obtained by him showed that the specimen he examined was inferior in quality to the present sample. (Report on Indian Fibres, 1886.)

The following are the results furnished by the two samples:—

SANSEVIERIA ZEYLANICA	Assam.		From Colonial and Indian Exhibition.*
	Assam.	From Colonial and Indian Exhibition.*	
Moisture%	9.4	9.7	
Ash%	0.7	0.7	
Loss by A. hydrolysis%	11.8	12.5	
Loss by B. hydrolysis%	14.9	16.5	
Loss by mercerising%	11.6		
Loss by acid purification%	1.4	2.5	
Gain by nitration%	33.5	6.0	
Cellulose%	75.6	64.6	
Length of ultimate fibre in mms.	1.5—3.5	1.5—2.5	

With the exception of the results of chemical examination obtained in the Scientific Department of the Imperial Institute, there are very few available for purposes of general comparison of monocotyledonous fibres. Reports on twenty-one different species have from time to time been published in the Institute Journal. Many of the fibres dealt with in these reports were obtained, it is true, from plants which were not indigenous to the locality they were grown in. Special care, however, had been taken in the cultivation and treatment, so that the fibre which they furnished was probably little inferior to the same kind of fibre derived from the wild plants grown in their natural habitat. Accepting the results which they furnished as suitable for purposes of general comparison, it appears that the "cellulose" numbers furnished by fibres of monocotyledonous origin range from about 61 to 77, the average number being about 70. The "nitration" numbers range from 9 to 34, with an average about 20.

Cellulose.

Nitration.

Sansevieria, which furnishes the numbers 75 and 33, respectively, therefore ranks high among these fibres. Again, the A. and B. "hydrolysis" numbers, and especially the difference between them, are of special significance. The Victorian monocotyledonous fibres may indeed be classified from this point of view (see Victoria-grown fibres, Imperial Institute Journal). Thus, the approximate A. and B. hydrolysis numbers and differences are, respectively, for the Cordylines:—15, 19 and 4 for the Agaves:—16, 21 and 5 for the Kniphofias:—17½, 23 and 6.

Hydrolysis.

Victoria-grown fibres compared.

These would indicate that it should possess special powers of resistance to weathering and the accompanying hydrolytic effects. The general results of chemical examination of this fibre may be considered as very satisfactory. A comparative statement of the results furnished by the monocotyledonous fibres, showing the relation of Sansevieria thereto, is appended:—

	A.		B.	Difference.		Cellulose.	Nitration.
	No.	No.		No.	No.		
Cordylines	15	19	4	68½	18		
Agaves	16	21	5	75½	19		
Kniphofias	17½	23	6	71	29		
General range	10—18	20—30	10	61—77	9—34		
Sansevieria zeylanica	12	15	3	75½	33		

The reports of experts on this sample of Sansevieria were favourable, although it exhibited some trifling defects due, probably, to the degree of maturity of the plant from which it was prepared. A supply of several tons has been asked for, with a view to submit it to practical trials.

* (Report on Indian Fibres.)

NOTE ON THE CULTIVATION OF *SANSEVIERIA ZEYLANICA*, BY A WEST INDIAN PLANTER.*

Cultivation of murva fibre.

The plant grows best in a moderate shade in black soil, the cultivation is *easy* from either cuttings from stems or from roots, the plants should be about 18 inches apart and 18 inches between the rows, the soil should be moist but not too wet, and the growth is much more rapid under shade than in the hot sun and the quality of the fibre is better. The plants are usually ready for cutting in from 9-12 months and may be cut at any season, *except after a long drought*, when the fibre is apt to be harsh and tender. The plants attain nearly double the height in black soil and shade compared with the red soil in the sun, and the fibre of the freely growing plant is naturally much superior.

THE NUTRITIVE PROCESS IN PLANTS.

(PROF. J. REYNOLDS GREEN, D.Sc., F.R.S.)

No IV.

(Continued.)

CARBOHYDRATE reserve materials are not always deposited in the shape of starch grains. The roots of our biennial plants furnish us with examples of another kind of store. If we examine the root of a beet or a mangel wurzel we find that the succulent substance is distinctly sweet to the taste. This sweetness is due to the presence of a solution of cane sugar in the sap. The cells are very turgid with water, and this contains a large percentage of cane sugar. Indeed, the manufacture of sugar for the market from beet-root is, as is well-known, of great commercial importance. The sugar here remains in solution, and is not deposited as starch as in the former case. We cannot however, think of it as remaining unchanged after its transit from the leaves. The process of its formation is much like that of the potato at first. But when the leaf starch has been converted into sugar, that sugar is malt sugar as before, and it is transformed into cane sugar after its arrival in the root.

An onion affords us an instance of yet another kind of carbohydrate deposit. Here the fleshy leaves of the bulb, wrapping it so closely round as to form a very solid body, are charged with an accumulation of grape sugar, a third kind, differing from both malt sugar and cane sugar, such as we have seen to occur during the processes already described.

The chief form of deposit in seeds is that of starch, which is the most stable body and the least liable to disturbance. This no doubt is why it is adopted by the plant for this reservoir, as generally a longer time, indeed in some cases a very prolonged period, passes before it is called upon to supply nourishment to the young plants. Carbohydrate material is thus stored in many forms and in various places in the plant. Similarly, nitrogenous material or proteid has its appropriate reservoirs. We have in many seeds, particularly leguminous ones, stores of this material in the form of definite granular aggregations, which botanists have called *aleurone grains*. If we take for instance the pea or bean, we see that the cells contain embedded in their protoplasm structural elements of two sizes. The larger shows the curious concentric marking peculiar to starch, the smaller show no structure. Instead of turning blue when treated with iodine, they become brown or brownish-yellow. These small grains are the aleurone grains, and are made of proteid. This substance is not all uniform in its properties, indeed, we are familiar with many kinds of proteids, which differ very considerably with regard to the fluids in which they will dissolve. Those proteids which most readily occur to our memory are the albumin or white of egg, the globulin of muscle,

the fibrin of blood, and so on. Though the vegetable proteids are not met with in the same condition exactly as the animal ones, they are nevertheless very much like them in their composition. The aleurone grains of the pea have very striking similarities with the globulin found in muscle. A good deal of the substance is soluble, like that, in a ten per cent. solution of common salt, and salt added to saturation to such a solution of the proteid precipitates it in the form of an amorphous mass. Parts of some aleurone grains are soluble in water, and resemble some of the soluble proteid of an animal digestion. The albumin or white of egg is very much like a proteid which is found on the underground parts of the asparagus, which must be accordingly called a vegetable albumin.

If we wish to study the deposition of proteids in these vegetable reservoirs, we turn to the seeds rather than to other parts of the plant. In seeds they are very common. The pea and bean have been alluded to; here they occur in conjunction with starch. Other seeds, such as the rape and the linseed, show them associated with oil. In some seeds they are distributed throughout the whole substance of the embryo; in others they fill the endosperm; in the wheat and barley they occupy a single layer of cell just underneath the outer covering.

In most of the seeds produced by our cultivated plants, the aleurone grains are very simple in structure; indeed they show no structure, being little rounded masses of granular-looking material. In some foreign seeds, particularly the seeds of the castor oil and the Brazil nut, they are much more complicated. In our own flax we have similar ones. Various solvents need to be used to show the structure, which consists of the following parts. There is an oval casing or matrix, part of which dissolves in water, and the rest in 10 per cent. solution of common salt. Embedded in it is a large regular crystal of proteid matter, which will only dissolve in a saturated solution of salt. This is known as the crystalloid. Between this and the outside of the grain is a rounded irregular mass of small crystals of the double phosphate of magnesium and calcium, which is known as the globoid. This of course is not proteid though it is always embedded in the grain.

LETTERS TO THE EDITOR.

ANSWERS TO CORRESPONDENTS.

"No. 15." Your address has been mislaid, please communicate with us "Horjatu." We should like to hear again from you on the subject of your last letter.

["Planters' Library," "Gonibede," "Bangalore" and "Yercaud":—We are afraid considerable delay will elapse before you obtain the books ordered. Our own stock is very small, and two of the firms to whom we passed on those orders which we could not comply with, report being temporarily out of stock.—Ed.]

OUR COOLIES AND THE FAMINE FUND.

DEAR SIR,—I opened a subscription list among my maistries and coolies and they have almost to a man subscribed to it.

We are all about to pay up and get rid of our labour; before he leaves I am certain every coolie will give something from his earnings were he given an opportunity. I have written to the Secretary, U. P. A. S. I., on the subject, and I think the P. O. can help in the good cause by putting the idea before others.

"BET."

DWARF LIBERIANS.

SIR,—I have three diminutive Liberian plants in the nursery which are $3\frac{1}{2}$ inches in height from the surface of the beds and the leaves of which average $2\frac{1}{2}$ inches in length. Three days

*Furnished by J. R. Royle, Esq., C.I.E.

PHELPS & CO. have often been asked why they don't open a branch in Darjeeling, but for that matter they have been pressed for years past to open at Bangalore, Coonoor, Madras, Rangoon, Lucknow, Cawnpore, Delhi, Mussoorie, and even in Nainital but they prefer doing business from their Head Establishment, where the Managing Proprietor can have everything under his personal supervision, and travellers are employed to visit everywhere.

o, when the coffee in the field came into blossom, each of the
ree plants bore a single small flower at the top of its stem,
r want of branches, I presume!) The flowers had the usual
ht petals and have blossomed and set. The seed from which
ese plants were grown was put down on 1st May 1896, and
e seedlings were transplanted from the original beds into
sh ones about the middle of September following. The other
ants in the nursery are double the height of the three flower-
g ones, a flower and leaf of which I enclose.

Can you, or any of your readers, let me know the process
rsued by "John Chinaman" for raising "Tom Thumb" fruit,
., trees, such as used to meet my astonished gaze in China?
"EINOMEN."

NORTH WYNAAD, 26-2-97.

NILGIRI SNAKES.

SIR,—Would you care to insert the following regarding the
ic Polonga" in your valuable paper. Replying to K. V., during
residence of 15 years on the Nilgiris at elevations varying from
000 to 5,500 feet, I have never seen any snakes to answer his
scription exactly, but have seen about 15 to 20 specimens of a
nd that resembles the one he mentions. These are $3\frac{1}{2}$ to $4\frac{1}{2}$ feet
length, thick flat body, colour dull grey, with beautiful black
al rings edged with pale yellow. The abdomen is dirty
nite, fangs "retractile," very large. When annoyed by dogs
coils up and keeps up a continuous hissing that can be heard
to 60 yards away. They are very poisonous and dreaded by
e natives owing to their sluggish habits. I have known a pony
die within 12 hours after being bitten. A dog lately bitten (by
e that was at the time almost cut in twain by a charge of
ot) recovered, but the flesh robbed away, leaving a spot $1\frac{1}{2}$ inch
ameter where the snake struck. These snakes are common all
er the Nilgiris. Their peculiar colour like that of fallen leaves
akes it difficult to detect them. I shall be glad to send K. V. a
ecimen when next I come across one, if he will let me know
ow to send it and to where. The native name is "Kunnady
rian."

KARBEN JOGIE.

KARBEN, 24th Feb. 1897.

CATTLE AND POONAC: COMPARATIVE VALUATIONS.

SIR,—Will some of your experienced readers correct me in
e following figures. I have never done any previous manur-
g, and my calculations are possibly wrong. I want to manure
me tea, and naturally as cheaply as possible.

Cattle manure costs Rs. 1 per ton on the estate, Nitrogen $\frac{3}{4}\%$
Poonac " 90 do. " $10\frac{1}{2}\%$

The usual application per tree is, I understand, about $\frac{1}{2}$ bushel
cattle manure every three years, and about 4 ounces of
ponac every year.

Namely: Cattle manure say 80 tons per acre triennially
Poonac $\frac{1}{4}$ ton " annually.

The cost of 80 tons cattle manure at Re. 1 per ton is Rs. 80,
us application, say Rs. 20 (?) = Rs. 100 per acre every three
ears, or Rs. 33 per annum.

$\frac{1}{4}$ ton Poonac at Rs. 60 per ton is Rs. 15, plus cost of appli-
tion, say Rs. 10 (?) or Rs. 25 per acre per annum.

Cattle manure gives 20 lbs. Nitrogen at a yearly cost of Rs. 33
oonac " 60 " " 25

The conclusion to me seems very obvious: but is it correct?
I am an absolute beginner in manuring, and should be exceed-
gly obliged for any and all criticism on the above.

POONAC.

P.S.—The percentage of the nitrogen in cattle manure is
ertainly higher than the usual run of manure, while that of
oonac is rather lower, I fancy, than the average.

IMPROVED COFFEE SEED.

SIR,—I don't quite follow the advantages of the extra ash in
Mr. Grey's seed. As a marketable coffee, a heavier roasted
bean is of course a great desideratum and soils, like the Babo
Boodens, rich in ironstone, are supposed to produce a very much
heavier bean than others; but as I understand it, it is the organic
matters, oxygen, hydrogen, nitrogen and carbon that are contain-
ed in the seed that form the food of the young seedling and
plant, until the roots are able to absorb their food from the soil.
This organic matter is dissipated when the seed is reduced to
ashes and only the inorganic or mineral constituents remain, but
as I take it this is not what the young seedling wants. I admit
that a plump bean will give a fat seedling, but I fail to see how
an extra amount of inorganic or mineral matter is going to help
us. It is the nitrogen, albumen, starch, &c., which with their
combinations with oxygen after going through the changes
necessary produce the robust seedling in proportion to their
presence. The root then absorbs assimilable matter from the soil
and out of the inorganic or mineral matters produces the fibres,
&c. Of course I may be wrong, my botany, plant physiology,
or whatever it is, is very poor and a bit ancient. Was the coffee
analysis of bean with or without parchment?

What becomes of the mineral constituents in seed?

I am sending a few seed for analysis for comparison. The
seed are from acclimatized Coorgs, grown in a very sandy loam
soil, interspersed with gneiss or granite boulders. Altitude 4,000.
Rainfall 100 inches. Cultivation under partial shade. Manured
oil cake and bone. Western facing. Situation same range as
Cannon's Mysore. The seed is small but regular. I should like
to try some of Mr. Grey's seed, but should like to hear some-
thing more about it and see it discussed.

If you want any more seed from hereabouts or Babo Boo-
den, I shall be very glad to get and send you some.

"BET."

[We thank you much for the seed, and shall forward it to Mr
Grey.—ED.]

THE COFFEE CAMPAIGN.

SIR,—I perused with interest the two letters on this subject
in P. O. of February 20th.

I sincerely hope, as does your correspondent, "Push the Coffee
Cup," that this subject will not be allowed to drop, without
being thoroughly discussed.

I agree with "B. H. E." when he says that much may be
effected by private effort, in promoting the consumption of
coffee. But I cannot agree with him, I must say, when he
says: "I do not think that much good could be derived from
teaching people how to make coffee. The upper classes who
use our coffee find out how to make the most of it." "As one
practical illustration is worth a score of general assertions," I
give the following: I went Home from India some years ago,
and was invited to make a short stay at a friend's. On coming
down to breakfast in the morning, I found that coffee was
always drunk at this meal, and I was handed a cup. But a few
mouthfuls were sufficient to convince me that the cup contained
something very different from the delicious, exhilarating and
refreshing beverage I had always been accustomed to on "the
tote." I could not drink it, it nauseated me! Morning after
morning I went without my accustomed cup of coffee, rather
than stomach this vile concoction, which was erroneously called
"Coffee." I subsequently found out that the lady of the house
used to buy her coffee and chichory (perhaps it would be more
correct to say her "Chichory and Coffee," for I'm sure there
must have been a larger proportion of the former than of the

has been remarked several times that no doubt PHELPS & CO. will raise their prices, now that they
have taken their Ladies' Department to 4, Russell Street, but it is a mistake.

latter in her—what shall I call it—preparation) separately, and mix them herself, her grocer having given her the proportions most probably.

Can a person be said to know how to make a good cup of coffee, who adulterates to such an extent the pure article, so as to make it unrecognizable? Or one who makes the coffee of such strength as to upset people's digestions? I trow not.

I could recite many more instances similar to the above, but consider the one given sufficient to convey what I wish to convey to your readers, i.e. the necessity of waging a war against adulteration, and the mistaken notions as to how a cup of coffee ought to be made. And this I hold can best be effected, in a way, similar to that the tea-planters adopted at the Chicago exhibition, viz.: to dispense numerous cups of coffee gratis to a select gathering, and give them lectures on say, "Coffee—From Plantation to the Cup."

Once public interest is aroused, which is the end to be arrived at, such firms as Messrs. Lyle & Co., of which your correspondent "B. H. E." writes about, can be recommended to the public to supply them with *pure and unadulterated coffee*.

CUP OF COFFEE.

COFFEE IN CEYLON.

SIR,—In the overland *Times of Ceylon* I see you are attacked for the paragraph re the appointment of a Ceylon man to manage the Dumont Coffee Company.

As the para. in *P. O.* was based, I believe, on what I wrote you, I should like to call your attention to the fact that no mention whatever was made in *P. O.* of Mr. Talbot, and no mention of any Planter by name. If you have a Ceylon directory dating back a few years you might be able to throw some light on Mr. Villier's (the man appointed by Mr. Talbot) record. I have a strong impression that he came to Ceylon after my time, (I left in 1888,) or if not he was only a creeper then. You will note the *Times of Ceylon* says one would infer from it that the writer holds the opinion that it was the Ceylon Planter who caused the coffee of Ceylon to die out, an assumption it would be ridiculous to controvert. Nobody would of course hold that it was the Ceylon Planter, but whether or not it was the Ceylon system of cultivation is another point altogether. There is a good deal more in a system of cultivation than is dreamt of in the *Times of Ceylon* Philosophy. Whether there is any connection between leaf disease and clean weeding it is impossible to say; but there is no doubt that the continuous large crops disappeared soon after the general introduction of clean weeding. One effect of clean weeding in coffee in the open is to totally deprive the soil of organic matter and humus for the coffee leaves and prunings are all swept off by the rains. Knowing how fond coffee is of humus it does not require any great stretch of imagination to think that the total deprivation of organic matter is well calculated to affect coffee prejudicially. Any way Ceylon was the only country where clean weeding was the universal system and it is the only country where coffee has been so utterly wiped out. I consider the remark in *P. O.* that it does seem a little strange that the Brazil Dumont Coffee Company should choose as they done a Ceylon man as Manager for their estates perfectly justified. I should think the context of the paragraph objected to would clearly show that it was the Ceylon system that was referred to and no individual planter. In reference to the other cutting from the Ceylon Paper, if you think it worthy of reproduction, I hope I may be allowed to suggest the relevance of Mr. Talbot's Tea and Coffee shipments and sneers at the Nilgiri planters in connection with an appointment in Brazil is probably only obvious to the writer. I don't imagine Lipton with his large dealings in Tea and Coffee poses as an authority on their cultivation or his dealing in jam, bacon and cheese

would respectively induce him lay down the law on fruit growing, pig fattening or dairy farming. I believe I have omitted thank you for your directory, which came safely to hand, and find very useful. I suppose you don't know Mr. D. W. Mepper whereabouts. I sent him some E. L. seed 6 weeks ago and have heard nothing about it.

AN OLD CEYLON PLANTER.

LADY-BIRDS AND BUG.

SIR,—Your correspondent "Black Bug" in his letter to you the 28th January, (this was written before receipt of our last issue.—ED.) which appeared in your issue of the 6th instant brings up a point in connection with Lady-birds (*Coccinellidæ*) which has more than once occurred to me. So many estates in S. India are more or less heavily shaded that the fact of Lady-birds living or not living under shade may become a serious question: I have watched the habits of *Coccinellidæ* very carefully during the past year and a half and have found them under shade. That they are sun-loving insect is only too true but I am inclined to think that as I have found them to do this they will not hesitate to attack their prey under shade although they will return to the unshaded and sunny trees on the estate to live and breed. From what I can gather I believe that the coffee in Hawaii was not to any extent shaded, and where large trees occur they were citrons and as much infested with coccidæ as the coffee. Mr. E. E. Green's opinion on this point would be interesting.

I am not a Collector and have not studied *Coleoptera* in general, but I fancy I could find more than five varieties of coccinellidæ on the coffee in this district. Would "Black Bug" care to have specimens and would he identify them for me? If so I shall be glad to correspond.

I quite agree with "Black Bug" that it is improbable that many varieties of Lady-birds would forsake their natural food to blunt their teeth on Black Bug (presumably "Black Bug" means *Lecanium Coffee* and not *Lecanium nigrum*), but they would hold good with green bug (*Lecanium viride*) which is a soft shelled scale and would probably not only be a more plentiful but an easier prey for the Lady-birds where it is to be found.

With regard to your "occasional note" in same issue of Black Bug.

I shall be very much surprised to hear that *Chilocorus Nigrum* have been found preying on Black Bug (*Lecanium Coffee*). It is quite likely that another variety of coccinellidæ may be at work though. I hope the Kotagiri planter will have given you the details you ask for in your next issue. Would he also kindly send some specimens?

I have just had my attention drawn to a letter of Mr. E. E. Green's in the *Ceylon Observer* of the 6th instant. In this letter Mr. Green suggests that the reason of the slow increase in number of *Chilocorus Nigrum* is due to its natural enemies in this country and suggests an exchange of the different specimens of Lady-birds with Ceylon with the view of experimenting with them in countries where their own parasite may not be found.

This is, I think, an admirable suggestion, and I shall be most happy to exchange some of our coccinellidæ. Just at present unfortunately both the Green Bug and the Lady-birds are difficult to obtain, but in another month specimens should be fairly easy to obtain.

I am only afraid that Ceylon and S. India are too nearly allied to make it impossible that parasites may be found in both countries or at any rate that the specimens one exchanges may be so nearly allied that the parasites will not hesitate in transferring their attention from the exported to the imported Lady-birds.

However, as Mr. Green says the experiment would be interesting.

Ladies in the mofussil do not always realize that they can by corresponding with PHELPS & CO. at their Ladies' Branch at Russell Street, keep in touch with all that is newest and most fashionable in the world.

sive and easily carried out, and I think (and hope) may re-
t in practical mutual benefit.

PILLAVALY ESTATE, HOWARD NEWPORT,
TOOR P.O., MADURA DIST., Hon. Sec., L. P. P. A., Dindigul.
15th Feb. 1897.

The above was received just too late for insertion in our last
ie.—Ed.]

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma contains per ton :—

61-50	lbs.	Nitrogen.
57-38	"	Potash.
14-92	"	Lime.
13-63	"	Phosphoric acid.

Orders booked for the coming crop of seed from the parent
es of above analysis at Rs. 3 per 1,000.

Manager, ARIENKOW ESTATE,
SHENCOTTAH,
Tinnevely.

COFFEE.

Colombo climate. The Colombo climate has much
to answer for. Among other evils
has developed the acerbity of editors of newspapers to a
uly Yankee pitch. As witnesseth the following: A Brazil
mpany gets a man from Ceylon to report on its coffee
antations. The coffee industry in Ceylon being practi-
lly wiped out, we expressed our surprise that the Brazil
mpany did not go elsewhere. This enraged our worthy
ntemporary, the *Times of Ceylon*, who most ludicrously
uses us of jealousy of a certain Mr. Talbot, the Ceylon
anter who reported on the Dumont plantations in Brazil.
e learn with much interest that this gentleman ships
ore tea in a month than the Nilgiri district does in a year,
d as much coffee as the whole Nilgiri district put to-
ther, but do not quite understand the bearing of this
news" on the subject. We cannot find time to reply
ore fully to our contemporary's irate but amusing remarks,
it may mention that elsewhere a correspondent—an old
eylon planter—has something to say on the subject.

Mr. Robert Elliot's letter on this
important subject well shows how
comparatively easy it would be to bring the coffee campaign
a successful issue. Just at present the plague scare may
nder it difficult to do much in tapping new markets, but
ere is no reason why a beginning should not at once be
ade in England. The possibilities of the proposed
cket trade are proved by the details of the "war of
tes" between the two largest coffee firms in America.
ne of them has built up its huge trade almost entirely on
patent process of "glazing" or hermetically sealing their
ffee immediately after roasting. This of course preserves
e full flavour and gives the minimum of trouble to the con-
mer. It should not be impossible to do something in the
me way to encourage the sales of our own high flavoured
ean. Everything that brings the producer into nearer con-
ct with the consumer is of great mutual benefit, resulting
a cheaper and better article for the latter and higher
ices and larger sales for the former. Mr. Elliot truly states
at much of the Mysore coffee is bought up at greatly en-

hanced prices by the large grocers immediately after the
public sales. This was pointed out in our issue of January
9th by an extract from the *Produce World*, a journal con-
ducted by a large firm of produce merchants, Messrs. John
Haddon and Company, who may surely claim to be in the
"know." There is one thing to be remembered, wholesale
sales mean wholesale prices. By selling on commission, a
bag at a time, it is not improbable that planters could get
fully twenty to twenty-five shillings more per cent.

The European Market. At the Dutch sale on Tuesday,
the first of the year, the moderate
amount offered, says the *Produce Markets Review* of the
6th February, sold at an irregular advance of $\frac{1}{2}$ to 3 cents
over the valuations. Here the market has continued in
the same starved condition, the arrivals that were expected
having been further delayed, and the auctions having
contained only very small quantities. Yesterday there
was a rather better supply of new crop Costa Rica,
including some of the most favourite marks; the quality
was good, but not equal in appearance to the first shipments
of recent years. The demand for them was very strong,
and extreme prices were paid; there can be little doubt
that such prices will not be maintained as soon as a
better supply arrives. A small consignment of new crop
Neilgherry was also offered on Wednesday, and the quality
was only medium, but very full prices were paid. In other
descriptions there has been a good demand for coloury
sorts, but pale kinds have sold rather irregularly. In
the terminal market a fair business has been done at
steady prices, although the tendency has been to lower
quotations.

LONDON COFFEE RETURNS.

—	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897.	1896	1897	1896
For the week ending Jan. 23, 1897.	Tons. 259.	Tons. 257	Tons. 224	Tons. 253	Tons. 8,200	Tons. 7,784
For the 3 weeks ending Jan. 23, 1897.	849	790	691	623	—	—

Curing and prices.

In reply to an article that lately
appeared in this paper, an experi-
enced planter gives it as his firm conviction that until the
character of the cultivation and pruning, as well as that of
the curing, is changed in Brazil, South Indian Planters
may keep an easy mind. He holds that a pruned bush
cannot fail to give coffee of far higher quality than an
unpruned tree. Further, that our cultivation and manuring
also has an enormous effect on the value of the bean, and
lastly that our climate gives the final guarantee that Brazil
will never be able to compete in the higher grades of the
market. This may be comforting, but to us is not quite
convincing. A few facts in support of the above conten-
tions would be more to the purpose.

In an interesting article on the situation, a writer in the
Calcutta Planter remarks :—

HYDROCELE & ASTHMA. Instant relief! Permanent cure guaranteed or the Price (Rs. 5) refunded. Don't
OMy.] despair, even if in the last stages. Apply to—MANAGER, V. C. WORKS, Ranaghat, Bengal.

The greater part of Brazilian coffee is cured badly, similarly to the Native coffee out here. It is dried in the cherry, and then deprived of the pulp and parchment by the aid of machines. The only difference is that the people here use pounders. But it is to be borne in mind that some of the coffee in Brazil is washed; and that, as Simmonds says, the quality has been so much improved of late years that much of the coffee is sent to Europe and sold under the names of Java, Ceylon, Martinique, San Domingo, and even the famed Mocha. At the Paris International Exhibition Brazilian coffee was awarded a gold medal over all other coffees. We must not run away with the idea that American coffees are in themselves inferior. Their inferiority is due to bad curing. Indeed Simmonds himself has emphatically declared that an impression which some have that American coffee is inferior to the Eastern, as, for example, the Java, and far famed Mocha, is erroneous. On the contrary the coffee raised on the highlands of Nicaragua and Costa Rica is unsurpassed for strength and a delicate aromatic flavour unknown to the best coffee of the East; and the fruit of the lowland and medium elevations is far from inferior. Although not having the plump form or peculiar bluish tinge which are the characteristics of the excellent coffee of the highlands, it compares favourably with the coffee of Java or the Moluccas. So Brazil has only to adopt an improved method of curing to become a dangerous rival to India, where, by the way, the greater part of the best land in coffee districts has already been taken up, leaving little room for increase of production.

TOPPING.

If the stem be cut immediately above the topmost pair of primaries, there is the danger of the stem getting split by the weight of fruit on the branches, or by coolies pressing with their arms on them. To obviate this it has been recommended that the stem be allowed to grow up one joint above the highest branches it is intended to leave; then take off the pair attached to it within the first pair of leaves, thus forming a small cross at the top. By this means, it is said, the top of the stem will be strengthened, and as the suckers always spring from the highest buds left on the stem, their removal will be facilitated. Rather I should think that the short stem left will dry down to the first pair of permanent branches left, and there would then result about the same amount of danger of the stem splitting as in the first plan of topping as described above. I have found it the most satisfactory to cut the stem and one branch, at the exact height at which it is intended that the plants should be, taking care in each case to leave a short stump. These stumps die back to the joint at which the branch has been left, and a hard knot is formed at this point. The top of the tree in this method is like the letter L reversed, *l*, and there is no danger of splitting.

In topping it is always well to comply with the following rules:—In cold climates or in poor soil top the trees low, as in both cases the trees will not naturally grow to any great size. In situations exposed to strong winds for prolonged periods, the trees should also be topped low, even if the soil be rich, because if allowed to grow up too high they would be much shaken and hurt by the wind. The height at which trees in exposed situations should be topped depends of course on the strength and violence of the wind, and perhaps in a minor degree on its duration. It would be safe to say that a uniform height of 2½ feet would be just the thing for exposed situations; but it has sometimes been necessary to keep trees down to two feet and even lower. In one case I have heard that it was only possible to grow trees, and that only in the sheltered valleys, by topping them above the second pair of branches from the ground, and after they became sufficiently strong letting up a sucker and topping that in the same way; and so on till a tree of about from 1½ feet to 1¾ feet had been attained! But that is "another story." On sheltered rich land in every way suited to the growth of coffee, the trees may be allowed to run up to a height of even five feet. But this is inconveniently high for the tree to be worked to the best advantage; I mean in pruning, handling, and gathering crop. In no case therefore should the height of a tree exceed four feet. In all cases where trees are topped low of course it will be necessary that they be planted sufficiently far apart to obviate their becoming too much entangled, as the lateral growth is greatly extended by low topping.

It is, however, of the greatest importance to keep the ground well covered, as this keeps it cool and tends in a great measure to keep the borer in check. As a general rule six or six and a half feet may be stated as the safest distance apart at which to plant when low topping is adopted.

There is also a good and a bad time, it is stated, for topping trees. If they are topped directly they have attained the proper height this tends to make them bear too heavy a maiden crop, which would occasion much harm to the young trees. It has therefore been recommended that the trees should be allowed to go on growing after the flowering period, when it would be impossible for them to overbear, owing to much of the sap being expended in upward growth. But I think this plan tends to the weakening of the lower branches, the sap being drawn upwards, and they being deprived of their due share of nourishment. Hull characterises it as an "absurd waste of sap, vitality and lime." I think a far better plan, as practised in many cases here, is to top the trees when they have reached the required height, and if after the blossom has set it is found that they are overbearing, strip the berries directly after they have formed off the green wood of the branches, which will be towards their ends. Stripping the fruit thus early will prevent waste of vitality, etc., and strengthen the branches.

Topping, it has been well said, "declares a war with nature that admits of neither peace nor truce. The enemy immediately throws up, from under the highest pair of branches left, two or more supplementary stems, and renews them as often as they are removed." The constant removal of these suckers forces the sap to expand itself in lateral growth, and if the tree were left to itself it would soon become an entangled mass impervious to light and air, and consequently deficient in the powers of producing fruit. It is this that necessitates handling.—*The Planter.*

COFFEE CULTIVATION WITHOUT MANURE.

THE ASSIMILATION AND UTILIZATION OF ATMOSPHERIC NITROGEN.

In the growth of legumes in coffee whether plants or trees, there is one great point to be considered, to which perhaps sufficient attention has not been paid, that is that the amount of atmospheric nitrogen varies in direct proportion to the quantity and size of nodules on the roots. An examination of leguminosæ will clearly illustrate this, some having only a few nodules and others covered

Nitrogen and nodules. with them. It is a well-established fact that the assimilation of nitrogen is coincident with the development of nodules, and I will now proceed to prove that the amount of nitrogen varies with the size and quantity of nodules. To prove this I will take the best available authority on the subject, Dr. Voelcker quoting from "Nitrogen." The process by which leguminous nodule-possessing plants assimilate free atmospheric nitrogen is that the bacteria in the nodules are gradually changed into a particular form known as "bacterioids," and it is by virtue of their network arrangement in the cells of the nodules, that presents the largest possible surface to the air that they are enabled to absorb the free nitrogen of the cell sap and render it assimilable for the plant. Hence it follows that the larger the nodules, the greater surface is presented to the air; and conclusively proves my first point that in judging the value of a legume the size of the nodules is, next to the quantity, the most important factor to be taken into consideration. In reference to the quantity we read: "If in a soil already exhausted by heavy leguminous cropping, of its neutral bacteria, there be put in another leguminous plant which is not closely related to the previous one, there will no longer be the conditions present for the formation of nodules, or else this formation will be so meagre that it has but little value for the nitrogenous nourishment of the plant." This I take it proves my second point that the quantity of nodules is of great importance, and substantiates my statement that in judging of the manurial value of a legume the size and quantity of nodules are of primary consideration. The manurial value of legumes compared with other green manures consists principally in the amount of atmospheric nitrogen they have taken up. I write principally, advisedly, for it is by no means the sole advantage they have, other advantages being the higher root solvent power of legumes. solvent power of legumes compared with other

nts, and the fact that the *Bacillus Radicicola*, the nitrogen extract-organism, has the additional power of elaborating phosphates and cash from the soil. The superiority of legumes as green manures is admittedly uncontested, but what is perhaps not so generally recognized is that legumes vary in their value among themselves, *i.e.*, applying the rule test I have just indicated. An examination of the roots of legumes will show such a great variation in the nodular growth that it is evident that although botanically a legume is a legume, yet for practical purposes of manuring the title of legume is by some legumes more or less assumed under false pretences. Should anyone desire to convince himself of the importance of nodules in the healthy development of leguminous plants a visit to a vegetable garden will probably satisfy him. Take a bed of dwarf beans for instance, the beans themselves will vary most probably in appearance and crop; an examination of the roots will prove that the most rigorous growth and the heaviest crop is coincident with nodular development, and if by chance there could be any half-starved beans bearing very poorly, an inspection of the roots will show that they are innocent of nodules. I trust I have established my point that in growing legumes, whether as shade trees or as a crop for digging in, the nodule growth is of primary consideration; as unless there is considerable nodular growth the atmosphere is not called upon to any great extent to contribute to the enrichment of our soils. Absence of nodules simply means that the soil alone is the source of nitrogen in the legume, which creates an injurious competition between the coffee and the shade tree or even crop for digging in; as the demands on nitrogen by leguminosæ are unusually high compared with other crops, and if the demand has to be met entirely from the soil, it is more than likely that in the competition between a leguminous shade tree devoid of nodules and a coffee bush the latter will come to grief. To instance the case of a leguminous tree that has no nodules or practically none I may mention the Gold Mohur tree (*Poinciana Regia*); its fatal effect on coffee is thus clearly explained. There are many varying degrees of nodules as an examination of the roots of indigenous leguminosæ will clearly show, what I want to impress on my fellow-planters who are trying or going to try legumes, that the *size and quantity* of nodules is a sure and certain test for their manurial value as the amount of atmospheric nitrogen taken up by leguminosæ is plainly in proportion to their size and quantity. The advantages of growing leguminous crops and ploughing them in are well known in Europe and I believe that more profitable use might be made of them in coffee cultivation. To instance the case of clover as a preparatory crop for wheat is a quote perhaps the best known instance. It is a matter of common knowledge that a clover stubble ploughed in affords the following wheat crop the nitrogenous nourishment it requires. In growing leguminous crops the one thing that has been clearly established is that it is essential that there should be an ample supply of microbes. This has been proved by the success of inoculating soils with soils in which leguminous crops have striven. An application of 16 cwts. of suitable soil per acre has been found sufficient to inoculate land with the appropriate microbes for leguminous crops and ensure a successful growth, the resulting produce without, and with inoculation being as 100:552. All this goes to prove the importance of growing legumes that suit the bacteria present in the soils. I am inclined to think that there is no need for soil inoculation; that there are plenty of neutral bacteria capable of entering into symbiosis with appropriate legumes, I hold Nature demonstrates, from the frequency with which she grows legumes in abandoned land, for instance the sensitive plant (*Mimosa pudica*), a weed which is common in the highways and byeways from almost sea-level to a very considerable elevation. This I think proves that the *Bacillus radicicola* is present in our soils, and all we have to do is to propitiate him by growing legumes that he is fond of, increasing his activity by cultivating his appetite. Evoking the activity of the *B. Radicicola* is a very important thing, as there is no doubt that with the *B. Radicicola* as an ally we can obtain all the Nitrogen that coffee wants and probably all the mineral constituents, the mineral constituents removed by coffee being remarkably small. The application of green manuring to ordinary farming in Europe is apparently meeting with some success, as the following quotation from a comparatively recent issue of the *Royal Agricultural Society's Journal* will show: Dr. Deblinger, soon after taking possession of a farm near Darmstadt, decided to sell nearly all the cattle, of which a considerable

number had been kept, and to adopt green manuring, supplemented with artificial manures, in the place of stable manure. Several years experience convinced him that the system is more economical than any other, the cost of nitrogen in pea and vetch manuring being estimated at rather less than a penny a lb. as against seven pence in nitrate of soda, tenpence in stable manure." The application of green manures to coffee is a simpler affair than their application to farm crops in Europe, each removing mineral constituents in varying proportions. In dealing with coffee we have one unvarying crop of known constituents and are able to supply the mineral constituents by growing a shade tree containing the same mineral constituents as coffee. This is one of the reasons I believe why *E. Lithosperma* has been so successful as a green manure (*vide* "Legume's" letter in *P. O.* of Feb. 6th). Its nitrogen is largely atmospheric and it is capable of assimilating phosphoric acid and potash in forms which are unavailable to the coffee roots. I am gratified to find that the claims originally advanced on behalf of *E. Lithosperma* have been vindicated. There were two claims originally advanced. That the tree was an extremely rapid grower, and that the cuttings and lopings were a valuable manure. The first claim has been amply justified and that the second should be equally so is hardly surprising, considering the analysis, in fact it would be more surprising were it otherwise. In the light of recent scientific publications I now advance a third claim; that is, that it has the power of assimilating atmospheric nitrogen to a very unusual degree. There seems to be some special fascination in the rootlets of *E. Lithosperma* for the *B. Radicicola* and they seem to increase and multiply to a tremendous extent. An examination of the rootlets of an *E. Lithosperma* will prove the truth of this further claim, and a comparison of its rootlets with those of other leguminous trees and plants will convince anybody that for *size and quantity* of nodules on the roots and the resulting assimilation of atmospheric nitrogen that *E. Lithosperma* is uncommonly bad to beat. I have found nothing to be compared with it among all the Indigenous cultivated trees and plants that I have examined. We have been informed that in Java the tree was especially valued for improving the soil by its root growth. I think we have the true explanation in the fact that its rootlets are so peculiarly palatable to the *B. Radicicola*. During the wet weather the tree makes enormous quantities of nodule covered rootlets which die off every hot season; these, I imagine, cause the enrichment of the soil. A question naturally arises whether more use could not be made of those rootlets than allowing them to come to a natural end. I think myself that it might probably be more advantageous to prematurely terminate their existence. At the close of the fine weather they are not wanted as plant food, for that is the very time when there is most soluble plant food on the ground, as the nitrates which have been carried down below the reach of the coffee roots in the wet weather are then recovered by capillary attraction; so the additional supply in the form of the dead *E. L.* rootlets is not then required. All the experiments made with it as a green manure go to prove that it is extremely quick acting and has almost an immediate effect. The leaves and cuttings decay at once and the nitrogen in them might, I believe, for immediate solubility and availability be fairly considered as nitrogen in the most expensive form, *viz.*, nitrates. I believe that the earlier the trees can be cut and applied the better, and that if it can be done by the end of June or not later than the end of July so much the better. This has an immediate action, is of the greatest assistance in running the coffee through leaf disease. I even think that a May manuring might be even better still. Later on, say August—September, after the worst of the rains are over, is, I believe, the time to make use of the root growth of *E. L.*, which I have every reason to believe can be done by digging freely. The rootlets are then in the active stage, and I know no reason why they should not have as beneficial effect on coffee as clover roots have on wheat. Wheat is a nitrogen exhausting crop, and with leaf disease and the monsoon coffee is also, and I know no reason why the roots of *E. L.* should not be as rich in nitrogen as clover. The shoots of *E. L.* are richer in nitrogen than clover is, and the roots have an infinitely greater nodule development, so I think it is a very fair presumption that *E. L.* rootlets which are then developed in enormous quantities

are at least as efficacious for coffee when broken by digging as a clover stubble ploughed in is for wheat. There is every reason to believe from small experiments that the root growth can be utilized in the manner indicated. The results have been so satisfactory that all the coffee under E. L. shade will be so treated this year. Thus E. L. is a tree that can be made to provide coffee with two manurings yearly with nitrates, and the digging of the roots could be also supplemented by another application of the cuttings without interfering with the requisite amount of shade. To those who doubt the possibility of a green manure supplying all coffee wants, I would call their attention to the amount of mineral constituents removed by coffee and replaced by the shade loppings. I only take note of the minerals, for the atmosphere supplies the nitrogen. The amounts of Phosphoric Acid, Lime and Potash removed according to Mr. Hughes by a 7 cwt. crop of parchment on respectively 2-8lbs., 3lbs. and 18-1lbs. The theoretical dose of E. L. to replace the crop removal would thus be only some few cwts. per annum, whereas instead of cwts. it is available by tons. With a view to settle once and for all the claims of leguminous manuring in general and E. Lithosperma in particular, I would suggest a very simple test. Interplant a small acreage of coffee between each coffee with E. L. and when the shade trees are 12 months old thin them out to 15ft. x 15ft. cutting up and applying *green* all the cut out trees. The trees should be cut down at or below the level of the ground so as ensure the immediate decay of the roots.

Putting E. L. to the proof.

I need hardly say that the better the coffee the better would be the results, as there would be more feeding roots to make the most of the generous supply of plant food. The extra cost of close planting would be recouped many times over by the tons of nitrogenous organic matter. E. L. as a manure would be made or marred. It would be a simple test and would bring the claims of E. Lithosperma to a definite and early conclusion:

"He either fears his fate too much or his desserts are small,
Who dare not put it to the touch to win or lose it all."

It is because I have no fear for the fate of E. L. that I suggest this expeditious method of putting it to the touch, while the stake I am playing for is surely a grand one to win. If not the complete abolition of manures at any rate, the certain elimination of any expenditure on the most expensive element nitrogen, would mean above the saving of many lakhs of rupees yearly. This is surely a grand stake to play for and win.

B. NELSON.

ARIENKOW,
SHENCOTTAH, 14th Feb. 1897.

COFFEE PLANTING IN BRITISH CENTRAL AFRICA.

(From *Chambers's Journal*.)

BY MR. H. D. HERD.

ALTHOUGH by the latest arrangement between the British South Africa Company and the Foreign Office with regard to these territories in 1894 the area over which the British protectorate immediately extends has been considerably lessened, there still remains under the direct administration of Her Majesty's Commissioner a country equal in extent to the area of Great Britain.

This country extends from Lake Nyassa on the north to a point on the Shiré River near its confluence with the Zambesi on the south; but the district to which our attention is more particularly directed is that tableland lying between the Shiré on the west and the borders of the protectorate on the east, and perhaps best known as the Shiré Highlands.

Here is the latest home of coffee; and seeing that the country has now passed through its little fever of wars with the Arab slave-traders on its borders, and peace seems to have come to stay, we think that the present position of its staple industry and its future prospects merit a wider publicity in the interests of those to whose enterprise and hardihood the country owes what prosperity it has.

The history of coffee in Nyasaland dates back only to the year 1878, when three small coffee plants from the Edinburgh

Botanical Gardens were taken out by Mr. Duncan, the gardener to the Church of Scotland Mission at Blantyre, and planted in the mission garden there. This was done at the energetic representations of Mr. John Buchanan. In the year 1880 the sole survivor of the three plants brought out by Mr. Duncan bore a crop of about one thousand beans. From the distribution of the seed, three years later, may be dated the beginning of coffee-planting on an extensive scale; but in 1881 the first serious attempt to put coffee on the home market, and to gauge its value as a commercial product in competition with other coffee, was made by the late Mr. John Buchanan, of the firm of Buchanan Brothers, whose name is so honourably connected not only with the commercial but the political development of the Shiré Highlands.

A sample of the first crop was sent home for valuation, and was quoted in the London market at eighty-five shillings per hundredweight.

From this time onward the unsettled state of the country made the future of coffee very uncertain, till in 1889 the declaration of a protectorate restored confidence and gave great impetus to the industry. Messrs. Buchanan Brothers opened up large plantations at Zomba, Michiru, and elsewhere while the African Lakes Company's coffee at Mandala continued to do well. Mr. Brown, of Ceylon experience, settled in the Mlanje district, which had been strongly represented by the late Rev. Robert Cleland as exceptionally well suited for coffee, and Mr. Duncan, having now left the mission, opened up a plantation near Blantyre.

From this point, so rapid has been the progress made, that the late Mr. John Buchanan wrote in *The Central African Planter* for October 1895 that no less than one hundred plantations had been opened up under the respective interests in the country, and that these plantations represented an area of six thousand acres under cultivation. The local revenue rose from nothing to £20,000 per annum in five years.

The services of Mr. Buchanan were recognised by the Government, and he received a C. M. G. in 1890. Much to the regret of every one, he died on his way home for a holiday on 9th March of this year.

Mr. E. C. A. Sharrer is now the largest owner of estates in the protectorate, amounting to about three hundred and sixty-five thousand acres, of which only about nine hundred acres are under coffee. It has been suggested that planters should also turn their attention to cotton-growing. Tobacco and tea have both been introduced.

So extraordinary has the development been during the last few years, that since 1889 the quantity of coffee exported has increased in an almost geometrical progression. The exact figures have been:

						Tons. Parchment
1889	...	...	...	...	...	5
1890	...	...	...	...	...	—
1891	...	...	...	...	...	10
1892	...	...	...	...	...	—
1893	...	...	...	...	...	42½
1894	...	...	...	...	...	74
1895	...	...	...	...	...	146
1896	...	...	...	(estimated)...	...	350

The year 1897 is looked forward to as likely to prove a record year, chiefly because a very large number of plantations come into bearing for the first time in that year; some planters being so sanguine as to put the yield at twelve hundred tons of 'parchment'—as the raw coffee is called before the membrane covering the seeds is removed.

The varying degrees of success attained have been due to many different causes, arising mostly from experience in trying to reconcile the approved methods of coffee cultivation

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D. N. MORISON,
MANAGER, KALLAI WORKS.

"Englishman," August 1st, 1896.

APPRECIATION OF AN INDIAN MIXTURE.

Messrs. CHILD & CO.,

The Wholesale Tobacconists of Chowringhee, are in possession of an autograph letter from Mark Twain.

"Indian Daily News," August 1st, 1896.

Mark Twain left a substantial memento of his visit behind him in Calcutta in the shape of a letter addressed to Messrs. Child & Co., and an old Mississippi pilot knows what good tobacco is, even when he takes to literature.

MARK TWAIN.

Calcutta, February 8th, 1896.

MESSRS. CHILD & CO.

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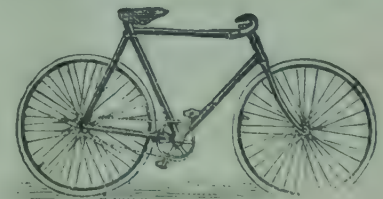
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Ceylon and India with the conditions of the new country; and partly also from local difficulties, as for instance the labour question, which were unforeseen, and could only be resolved as they presented themselves.

In the early days there was an abundance of local Yao labour, but the supply was irregular and unreliable. Constitutionally indolent, the natives in the immediate neighbourhood of the plantations were soon satiated with calico and other better goods; and in the wet season, just when labour in the plantations was most needed, there was none to be had, as the villagers had betaken themselves to the hoeing of their own gardens. The necessity for a reliable labour supply being evident, an attempt was made to bring down Atonga labour from the west of Lake Nyassa, which was entirely successful, the new-comers readily engaging to work on the plantations for several months at a time, and this at the most important period of the year, the wet season.

It is hoped that, acting in conjunction with the Portuguese Government, the promoters of this scheme may be able very shortly to extend the line all the way to the coast at Chinde.

A further step in advance was made by inducing the Angoni, an offshoot of the Zulus, and long the scourge and terror of the Shiré Highlands, to accept work in the dry season on the plantations; and now, instead of coming down in their thousands to devastate the country, they lay aside the shield and spear, and handle the hoe with equal skill. Only last year another large field of labour supply was opened by the abjuration of some disaffected chiefs on the north-eastern slopes of Mlanje. The Walolo, occupying a vast tract of hilly country to the east of Lake Shirwa, had for some little time been venturing down in small companies to work for the Europeans, but by the timely action of Sir Harry Johnston, Her Majesty's Commissioner, against these chiefs, the whole Walolo country has now become accessible to European influence. It is evident that there is every prospect of an abundant labour supply, and in this respect the outlook is very bright.

The chief drawbacks to coffee-planting have hitherto been the labour question mentioned above, and the inadequate and expensive means of transport. The Shiré is navigable for the present flotilla of steamers plying upon it as far as Chiromo, three days distant overland from the coffee district. For a very few weeks during the rainy season it is possible to reach Katunga, a point about twenty-eight miles from Blantyre, from the plantations to either of these points the coffee crop is carried in bags on the shoulders of coolies. The risk, inconvenience, and expense attached to this mode of transport have been greatly felt, but even this difficulty is about to be met by the construction of a narrow gauge railway line which will run from Chiromo to Blantyre, passing through or near many of the largest plantations.

The reckless mode of agriculture followed by the natives, by which they clear large tracts of forest land on which to make their gardens, is becoming so serious a question that the expediency of legislation in the matter has been considered. It is well known that deforestation is followed by a decreased rainfall, which reacts not only on the coffee crops, but on the health of the European. And where such wholesale clearing has taken place, land which might otherwise have been good for coffee is rendered temporarily useless for want of shade.

Efforts are being made to lessen the various circumstances disadvantageous to coffee by better systems of irrigation, planting of shade trees, and manuring. As showing the enterprise which is so prominent a characteristic of those Central Africa pioneers, it might be stated that during the

past year a 'Chamber of Commerce and Agriculture' has been formed, which promises to do much good in securing authoritative and unanimous action on the part of the planters in questions affecting their interests. But perhaps, above all, the *Central African Planter*, started last year and so ably conducted by Mr. R. S. Hynde, F.R.S.G.S., in the planting interests, is an unequivocal sign of a very bright and prosperous future for coffee in Nyassaland.

By the foresight and discretion of Her Majesty's Commissioner, who has given the industry much encouragement and consideration, the danger of introducing the leaf disease so common in Ceylon and India has been averted. No seed is allowed to be introduced into the country, even though sterilised, and although some inconvenience has undoubtedly thereby arisen, the risk justified the stringent measure.

The eyes of Ceylon planters have been for some time turned to Nyassaland, and in 1895 was formed the 'Nyassaland Coffee Company, Ltd.,' with a capital of three hundred thousand rupees. The quality of the coffee has been highly spoken of by the London coffee brokers, and it holds its own with the best Ceylon and Mocha coffees.

The late Mr. John Buchanan estimated that to bring a plantation of say two hundred acres into bearing in the third year would require an expenditure of two thousand to two thousand five hundred pounds (sterling). And he cautioned planters against allowing the trees to bear too heavily in the maiden crop, as there is a danger of the plant being thereby weakened.

Other estimates put the expenditure at *not more than* ten pounds per acre, or a little over three pounds per acre per annum for three years, and thereafter a large profit. The price of Nyassaland coffee as quoted in the London market for last year has averaged one hundred shillings per hundred-weight, but it has reached as high as one hundred and twelve shillings.

Under varying conditions the average yield per acre is somewhat uncertain, but competent judges put it at from three to four hundredweight per acre. Some maiden crops have yielded eight hundredweight, but not without injury to the plants.

Taking four hundredweight as the average, on a plantation of two hundred acres, this is equal to forty tons, with a selling price in London of four thousand pounds. From this, of course, must be deducted freights, which will not be less than eleven pounds per ton from the plantation to the market.

In the report on the protectorate by Commissioner Sir Harry Johnston, issued in August last, there is a valuable appendix devoted to the coffee industry, with a map of the southern Shiré Highlands devoted to coffee-planting. We learn from it that a survey for the proposed railway connecting Blantyre with Chiromo has been made, that the native population in the Lower Shiré district since the suppression of the slave-trade has increased from 1,000 in 1891 to 14,385 in 1896, and that if malarial fever could in some way be eliminated, British Central Africa would be an earthly paradise. The chief bane of British Central Africa according to the Commissioner is that 'accursed spirit whisky.' The exports have doubled during 1895-96, and not a little of this increase is due to ivory and coffee. Sir Harry Johnston entertains great hopes of the development of the negro of Central Africa. At Zomba there is one European head-printer; all the other printers are natives, who have been either locally trained at the missions or by the head-printer. The Commissioner has also an encouraging report regarding mission work in British Central Africa, and special mention is made of the work of Dr. Laws and others at Bandawe, concluding 'that it has only to tell

the plain truth and nothing but the truth to secure sympathy and support.'

Three species of liliaceous plants, of easy propagation, promise to yield fibre worth nearly £40 a ton. India rubber is another product which it is hoped may be largely developed, as the demand for it at present almost exceeds the supply. We are told that 'given abundance of cheap native labour, and the financial security of the protectorate is established. The European comes here with his capital, which he is ready to employ to almost an unlimited extent if he can get in return black men who will, for a wage, work with their hands, as he cannot do himself in a tropical sun. It only needs a sufficiency of native labour to make this country relatively healthy and amazingly rich. The cultivation of coffee would be a hundred times more extensive than it is if there were an adequate labour supply.' For unskilled labour three shillings a month, with or without food, is paid, and proportionately less for women and children. Skilled native labourers—carpenters, masons, brick-makers, &c.—receive wages of from four shillings a month to £40 a year. There seems to be every reason to believe, in accordance with the opinion of the oldest and most experienced planters, that the prospects of success in this industry are very hopeful. Considerable areas of land suitable for coffee are yet to be had, the price varying from five shillings to twenty shillings per acre, and no doubt as the country is better known, and more capital is introduced, the difficulties which have kept back and hampered its development will rapidly disappear, and British Central Africa will yet become, if not the most extensive, perhaps the most successful coffee-growing country in the world.

TEA.

PRUNINGS: A WASTE PRODUCT.

We lately had some remarks in this paper on the possibility of finding a profitable use for our tea prunings, which are at present a waste-product, constituting in many cases a serious danger to the welfare of our tea-plantations. Among other possible methods, we suggested the manufacture of theine and caffeine, and are glad to state that we have just received an interesting communication from Mr. Thos. Christy of London on this very subject.

His verdict is not altogether favourable to the feasibility of our suggestion, and his opinion, as that of one of the few who have studied the question at all seriously, is entitled to a careful hearing. He says: "After several experiments the experience is that the old leaves or twigs that are cut off contain a very small amount of caffeine, certainly not sufficient to make it worth while drying, baling and shipping the raw material to this country. I have tried the leaves picked at different seasons of the year, also the leaves that have been dried out of doors after being out from the bushes, and the percentage of caffeine obtained hardly ever varies.

Ship to China.

My advice to people in India is that it may be worth their while to collect these leaves when green, and perhaps fire them, cut them up, put them into bales and ship them to China, especially if they can get a low freight. Having lived in China, I know what the Chinese will buy, because we stand on different premises when we think about tea-drinking in England, or in India, or in China. Everyone drinks tea in

China, and I am sure these coarse leaves would be greatly appreciated by the Chinese, if they are not killed by the heavy duty, and they ought to be shipped into China and classified as "Drugs." These prunings, at some future date, may be turned to account when caffeine or theine (which is the same thing) is made in India. The caffeine predominates in the young leaves at the top of the plant, and as you descend down the plant, nearer the ground, the branches and larger leaves contain less caffeine. We have now had our third season since we induced planters to ship over to England the sweepings of their warehouses after collecting and packing it into bales under pressure. The small flower [Bloom off leaves, i.e. hairs round the leaf buds—Ed.] off the plant, sometimes called "Fluffy," mixed with this dust and it yields a very good percentage of theine; in some instances it fetches as much as 3d. 3½d. per lb., if there is not a large quantity of extraneous matter in it, such as rubbish and sand.

The making of theine.

This is a question which can only be answered by a manufacturer, and then again by some one who knows the circumstances such as temperature and the cost of spirit in India. The question has been put to me many times, owing to the tea sweepings from all the warehouses in London passing through my hands. I need hardly state that it is my opinion that, since the manufacture of theine has been introduced into England, the two houses that make it here have no doubt greatly improved by experience in the process of extraction. That caffeine can be made in India I have proof, because chemists in Assam have manufactured caffeine from the waste tea in the laboratory, and have sent it home to me in its rough state and also in a finished state of crystallization. That made in the rough form was as good as that ordinarily received from Germany, but I advised that if they continued to make caffeine in Assam, and could do it satisfactorily, it would be better not to bring it up to its high state of purity and crystallization, but to extract the alkaloid and send it home in its rough form. What we have seen has been so pure that with small amount of treatment it would be equal to that of the caffeine-makers in England, but the quantity was only an ounce. I understand that there are a great many chemists in the tea districts on estates, and medical men who have studied this subject, and there ought to be no difficulty in arriving at a result, but bear in mind you have to set against this, cheap packing, low freights down to the port, and low freights home; then we take this tea from alongside the steamer so that we have no dock charges to pay, and the Customs take possession of it in the dock and do not part with it until they have seen the whole of it denatured, that is to say destroyed with asafoetida and petroleum.

Tea gum.

If some of your friends had time it would be very interesting to them to boil out the gum from the stems, twigs and leaves of the tea tree, then strain it off and harden the gum, and when quite dry it could be shipped to England in boxes. This has considerable medicinal value.

Referring to the manufacture of theine, or rather a rough form of it, we reproduce a paragraph that appeared in our paper in last June: "I would advise, says a writer in a home

per, the extraction of the tea leaf refuse with boiling water, the refuse being boiled for at least an hour; the solution could then be filtered as hot as possible through muslin or calico, and the filtrate evaporated to obtain the extract in a concentrated condition for export."

In advising the manufacture of tea prunings for the China market, of the feasibility of which a trial consignment would be the only test, Mr. Christy advocates what is certainly a very novel idea. There is more than a spice of humour in the suggestion, what a capital cartoon could be based on the motif! Without going quite as far as China, I believe there is not the slightest doubt that we could find a ready and huge market in India itself for the green stripplings of tea prunings.

Many of our readers, we know, will wonder at the "russ" we are making about such an altogether (to their eyes) insignificant matter. Yet surely it must be within the ken of the most casual of our critics, that many a great industry now flourishing is based on the scientific utilization of what had been for generations before condemned as an utterly useless waste product.

the "Ceylon Times" on the Nilgiris.

Advise Nilgiri tea-planters to keep up a little more with the time, and though meant in a very spiteful way, there is a great deal of truth in what a late visitor to the district has said of it. According to him, gleefully says the *Times* of Ceylon, the planters are 15 years behind the times in tea-growing. They look, he says, on a man who has a little Giant roller and an old T. Sirocco as a "plunger" in machinery, and they have a most insufferable arrogance in regard to tea matters, imagining themselves to be wonderful people in the art of tea-making. Perhaps the best indication of the deplorable ignorance of the Nilgherry planters is furnished in the following remark in our correspondent's note:—"The estates are very scattered and isolated, and each man has a hobby, which is ventilated in the papers, quotations from the *Tropical Agriculturist* being final"!!!!

the movement of the trade.

direct to other countries than England. Though on the other hand the yearly increase to the mother country is far greater than that to other lands, showing the urgent necessity of straining all our powers to extending our markets. From April to January 31st this year, shipments from Calcutta to London show an increase, nearly, of 17 million pounds over those of 1895, while the increase for the similar period to other countries is under 5 millions. But the percentage in the former case comes to about 16% against over 62% in the latter, so the ratio of increase is comparably greater in the case of foreign markets. While on this subject it is worthy to note that though we have already practically captured the small *Black* tea trade in America, there is being experienced a great difficulty in risking the *Green* tea so largely consumed.

There is a great deal of sense in the suggestions made by a Ceylon contemporary that we should now devote the major portion of our energies to Russia, where the prospects of increasing our trade are a great deal better.

Home prices.

The quantity offered, says the *Produce Markets Review* of the 6th February, has been fairly large, but as there is a decided improvement in the demand, prices show no change of importance. There has again been a good proportion of the better-class Teas offered, mainly from the Assam district, and these have been readily bought at quite last week's rates. Most of these growths are of exceptionally good quality and strength, and so long as these characteristics are maintained they will continue to be well competed for, especially as the supply will probably diminish, as is usually the case at the end of the season. The Medium Leaf descriptions have not appreciably changed in value, and although there is not such a good selection of these grades as was offered at the latter end of last year, they are still comparatively cheap, and a fairly large business has been transacted in them. Similar grades of Broken Leaf are in excessive supply and meet with but a moderate inquiry at the low prices ruling, and it is evident that these kinds are not being used for blending purposes so freely as was formerly the case. For the commoner descriptions the demand is active, particularly for the more useful sorts, but as the quantity is ample to meet requirements, prices are unchanged. The following are the figures for the past month, compared with January last year:—The imports were 14,095,000 lbs., against 12,414,000 lbs., while the deliveries are about on a par, being 12,136,000 lbs. and 12,141,000 lbs. respectively, and the stock is 56,103,000 lbs., or 2,400,000 lbs. larger. Of the 42,000 packages brought forward at the public sales 38,266 were sold, and most grades were well competed for at steady rates.

The following figures are from Messrs. Stenning, Inskipp and Co.'s Indian and Ceylon Tea Market Review for 1896:—

HOME CONSUMPTION OF INDIAN, CEYLON, AND CHINA.

	Indian.	Ceylon.	China, all kinds.	Total.	Percentage of Indian.	Percentage of Ceylon.	Percentage of Indian and Ceylon.
1896	120,346,000	71,209,000	23,056,000	220,611,000	54½	35	89½
1895	111,174,000	71,544,000	30,663,000	213,381,000	52	33½	85½
1894	113,926,000	69,057,000	24,548,000	207,531,000	55	33½	88½
1893	103,136,000	62,721,000	34,105,000	202,962,000	52½	31	83½
1892	107,557,000	63,044,000	32,332,000	202,933,000	53	31	84
1891	97,855,000	51,393,000	50,817,000	200,065,000	49	25½	74½
1890	100,221,000	36,221,000	57,319,000	193,761,000	51½	18½	70½
1889	98,955,000	30,166,000	64,014,000	193,135,000	51½	15½	66½
1888	87,210,000	18,551,000	78,574,000	184,337,000	47½	10	51½
1887	83,112,000	9,942,000	87,553,000	180,607,000	46	5½	51½
1886	68,421,000	6,244,000	100,000,000	174,665,000	39½	3½	42½

MANURING IN CEYLON.

THE following is an interesting *précis* of correspondence on this subject, taken from the *Ceylon Observer*:—

Bulky manures continue to be regarded as the great desideratum

for tea by most writers: and none are able to anticipate freer use of cattle manure than at present. The manure at present in use comes from bungalow and milch cattle; and, on estates which border the high road or are situated in close proximity to it, from the bazaars and road-side cattle sheds. Cattle establishments would necessitate grass reserves; and the prevailing opinion is that land would be better utilized if planted up with tea or quick-growing fuel and timber trees. In these circumstances, artificial manures—chiefly bones and castor-cake, as in the earlier letters—and the results of their application, form the subject of comment in most letters. The general result is satisfactory. "1897," recognising the fact that "played-out coffee estates" account very largely for the acreage under tea, is emphatic in the opinion that, "if we wish to make ends meet, we must manure," though he would rather avoid manuring, if possible. The same writer suggests as the explanation of the better averages which Indian teas fetch, that the estates on the neighbouring continent have been chiefly opened on virgin soil, and adopt a different system of pruning, while they do not pluck all the year round. That is a point on which more light is required; for we do not despair of better prices with greater care in plucking and manufacture. "O. C.'s" unpleasant experience with Kandy refuse is noteworthy; but was the "incidental defunction" of his plants due to the quality of the muck, or to its quantity? It is well-known that there may be too much, even of a good thing. It is interesting to learn that careful records are kept on New Peradeniya; which is described as one of the most methodically manured estates in the Central Province, and that cattle manure comes an easy first—doubling the yield, against an increase of only one-third from the best artificial manure. That, we suppose, is explained by the character of the soil. On the other hand, "Oram" from Dikoya, backs artificial manures for quicker returns, and superiority in every way to bulky applications. The difference in the soil under the notice of the two writers probably accounts for their apparently incompatible views; but it is satisfactory to know that the systematic application of castor and bones for 8 or 9 years, has led to no untoward results, that the bushes look improved, that the yield has improved at least 200 lb. per acre, and that cessation of manuring for four years has not thrown the bushes back. A. F. S. from Kotmale reports more lasting effects from cattle manure, while artificial yields quicker returns: and his suggestion that, if it were possible, the two kinds should be applied turn about, is worthy of attention. Manuring at intervals of 2 or 3 years seems to find most favour, and it is a great point that manured tea feels the effect of drought less than unmanured. The testimony of A. F. S. runs directly counter to that of "A Novice" in the second batch of letters, as he reports not only no deterioration in the quality of tea, but even a slight improvement after manuring; but surely, the dictum that it would not pay to manure fields yielding less than 250 lb. per acre, needs qualification. We should think that generally these would require special attention, unless they are hopelessly bad.

The general conclusions above-noted are supported by our correspondent from Bogawantalawa, who reports increased yield and stronger growth of wood as a result of careful application of artificial manures; by W. B. J. from Agrapatana, who distinctly denies any deterioration in quality or flavour, while the yield has been increased two fold by systematic manuring extending over 5 or 6 years; and by "A Believer in Muck for Tea" from Kotagalla, and "All for Cultivation" from Rangalla who, as his *nom de plume* implies, believes in naught but good from manuring. "Proprietor" from Kellebokka, on the other hand, fails to see where the profits are to come from at present prices by the application of artificial, but he himself has obtained the best results by the use of cattle manure, line sweepings and coffee pulp regularly collected in manure heaps. "Oya" favours manuring at intervals of 2 or 3 years, and pronounces distinctly in favour of the appearance of manured fields; "Farmer" from Dimbula supports this opinion, and speaks of altogether beneficial results from manuring, "especially from poorish looking tea"—thus running counter to A. F. S.'s lack of faith—while he would think twice before applying artificial manures to really fine, well-bearing fields. K. T. B. from Kalutara counsels caution in the use of manures having a forcing tendency, in which we agree with him; but surely, it is not merely love of dividends which would take steps against a "falling back in yield." If decreasing crops mean lessened vitality,

science and true wisdom alike would suggest the supply of adequate plant food to arrest decay.

PRUNING.

WE extract the following practical hints from the *Indian Planters' Gazette*:—

You justly remark that most of us are afraid of writing to the papers because of possible adverse criticism, but this is exactly what is wanted, for without it there can be no interchange of thought. Thus thinking, I take up my pen to give my crude ideas on pruning.

I must premise that I am a bit of a fanatic on the subject, looking upon it as the most important work of the season, and the one on which everything depends for both quantity and quality.

Pruning, the dictionaries tell us, is the dressing or trimming of trees or shrubs to improve their growth. The difference between pruning at home and out here, being, that generally in the former case the purpose is for blossom and fruit, and on a tea garden for leaf. I came out long enough ago to see the bushes treated to a dressing with garden shears for all the world as if they were to be made into peacocks and menageries of the old-fashioned gardens. The more forward planter used a *dhao*, something like the machete of the West Indian. As time went on, however, it was recognised that careless pruning made decreasing yields, and knotty, spraying bushes, and gradually the old methods were discarded, till now, fancy, on the majority of gardens, small knives are used and knots carefully pruned out.

There are many who still use a murderous-looking weapon, more like a billhook than a pruning knife, both for light and heavy pruning, but I think there is little doubt that the yield of their gardens would be increased by the introduction of small knives and careful pruning.

To begin, taking my own experience in three districts with new and old cultivation, and in a fourth with old cultivation only.

I have left the plants to grow till three feet high, and then plucked all above that height, and then the season after that pruned them down below every branch, in no case leaving more than 10 inches above the ground. The plucking over the 3 feet tends to thicken out the stem and strengthen the roots; while the cutting down so low forces the plant to throw up a number of stems from its roots, while these are young; later on they will not sprout so readily.

The next year it will be found that there is already some breadth on the bush, and cutting 6 or 9 inches above the first year's cut and leaving 3 inches of new growth in succeeding years, the bushes will both grow and yield well. I have always found those cut down lowest in the first year make the best bushes in the end. Being by habit a tree, the most of the strength goes to the original stem if left long.

The style of pruning must be supplemented by very careful plucking at the beginning of the season, so that in the 3 inch new wood left there will not be a "plucking knot," this being the fatal thing to leave in a bush.

Now all this looks very simple, and the men using big knives and slashing across the bushes at a particular height for all of them will argue that they cannot go wrong if they use a measuring stick and cut to that every year, but not being great little tin gods, we cannot insist on each bush growing to order, nor can we be absolutely certain that every one has been correctly plucked, neither can we be sure that in the slashing a little too much or a good deal too little wood may be cut.

Year by year the bushes alter their character, though apparently having the same treatment. Now comes in the necessity for small knives and discriminating pruning.

This pruning can best be done by the women, and indeed they have the most interest in it as soon as they are got to understand that on their good work depends the amount of leaf got in the season. On my garden I have certain lines called by certain women's names that have been pruned badly by those women. These lines are kept as "buisis" for them in the plucking season, and they don't like it at all.

The aim of the light pruning is to leave only straight wood, and no

much of that, taking out *all* plucking knots and crow's feet small *banjis* inside may be left alone; if they are taken out, the trees will be just as full of them the next season, showing that the strength of the bush has been wasted in re-forming it, and besides they form a protection to the bark from the sun. It should the leaves be taken off as they (with the small *banjis*) are the lungs of the plant, and stripping the bush only renders it more liable to disease. Pruning and plucking give little enough, without any necessity for emphasising them.

The only argument I have heard advanced in favour of big knives (light pruning), and slashing, is cheapness, but, working it out exactly, the extra cost of careful pruning with small knives, on a large garden only amounts to from Rs. 500 to Rs. 700, part of which is saved in the initial cost of knives.

It is a simple sum to make out how small an increase in yield would cover this extra cost. The best knife for this kind of work is short straight or slightly curved blade, say $2\frac{1}{2}$ to 3 inches (or 6 inches) in length, with a slightly bent handle say $3\frac{1}{2}$ or 4 inches long. In the hand of an Englishman will go through almost anything, but for natives, especially women, who will *not* hold the knife at right angles to their arms, and the wrist stiff and always try to cut as if it were *dhan*, the hooked knife, like the Kaiser-i-hind, number three, is as good as one could get, but the handle should be shorter.

Bushes, unfortunately, have sometimes to be cut down, chiefly because of one or two eventualities, *i.e.* either because they are getting too big, or have been carelessly treated. For this, of course, big knives are necessary, and frequently saws. In this work the mistake most frequently made is in not cutting down low enough. The bushes have been carefully pruned for years, but should the pruning have been carelessly done it may be necessary to cut low, or quite level with the ground. It's either kill or cure, but the garden must be in a very bad state before this is necessary. I see it stated that cutting down injures both quantity and quality. I have never found it interfere with the former and other men have told me that they have experimented and not found it interfere with the latter. On this head I have no personal knowledge.

While speaking of cutting down, I may quote Mr. McMeekin, "If a bush really needs clearing out, it should be cut down."

The above remarks apply to all kinds, and China, indigenous, requires the same but lighter treatment all round, *i.e.*, always giving more wood.

To sum up, good pruning means *intelligent* pruning, *i.e.*, taking out all plucking knots, bad or diseased wood, and crow's feet. But the works on a garden fit in like parts of machinery, and good pruning is worthless if not followed by careful plucking and good cultivation.

A volume might be written on this subject, but I feel I have already been rather longwinded.

It's really wonderful how quickly the natives will learn about the good and bad points of growing, if one will only take the trouble of going round and pointing out bushes that have been spoilt by being cut just above or on the knots.

One thing remains to be noticed, the time for pruning. The tendency of late years has been to begin early and get it over as soon as possible. One reason for this is doubtless the desire to get the best of the market; another that some gardens get so heavily lighted towards the end of the season, that the Manager tries to make up for it at the beginning; while yet a third may be that the cold weather works must be pushed on." In my opinion, starting to prune directly plucking is stopped, without giving the bushes a rest, is distinctly prejudicial to their health. In fact, year after year I have noticed that gardens where pruning has been commenced the earliest, are invariably the worst blighted, and I can give more than one case where in badly blighted gardens, late pruning was found to be beneficial, nor have I been able to find that the earliest pruned gardens give the best yield; quite the reverse. On under-pruned gardens it may be an absolute necessity to begin pruning early, but my idea is, and always has been, that a Manager should so arrange his pruning that, with all his labour available for that work at the time, his garden should be finished by the third week in February; under pressure I have finished earlier in some years, but with no good effects.

Planters' Library.

Please note that purchasers will effect a saving by sending a M. O. or stamps for the price of the books, plus one anna on the rupee for packing. The value payable commission and registration fees will be saved, while the postage being charged bearing (at the same rates as if prepaid) will ensure safe delivery.

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"PLANTING OPINION," COONOOR.

SCIENCE FOR TEA.

MR. CHRISTISON, the well-known Darjeeling planter, if we may make a shrewd guess at the author's name, has been giving the Indian Tea Association in London his views on the aid that applied science might lend to the tea industry. We give the following digest from the full notes given in the *Home and Colonial Mail*. He first says that his remarks are entirely from a practical stand-point:—

Over-cropping.

Under the methods in vogue for the last eighteen years or so, I cannot conceive any general danger to the tea plant from over-cropping. On the contrary, without resort to manuring as generally understood, I am confident that, given labour and ample judicious cultivation, the produce from the present bearing areas in India, as a rule, falls very far short of their safe cropping potentialities, or what were in all cases originally the natural continuous productive capabilities of the soil. I do not venture to say over-cropping is impossible, but with careful, judicious pruning, under the present ideas of plucking for quality as I take them, it would not be easy, and must, I should say, be extremely rare. The tea crop is neither a heavy nor an exhaustive one; and more nitrogen is undoubtedly restored to the soil in the shape of vegetation turned in (or that ought to be turned in) in cultivation, also as derived from the atmosphere, and from the rainfall, than in more temperate climates. The average crop of green leaves taken annually is extremely light compared with the weight of agricultural crops (exclusive of the proportion returned to the soil) in this country. Recent methods are supposed by some to be more of a strain upon the tea plant than the old. But I am of opinion it is otherwise. In cropping for quality, the cutting in pruning is, perhaps, heavier over a majority of the years; but, on the other hand, excessive cutting should be less frequent, and never to the same extent necessary. The pruning, therefore, should not be more exhausting. Plucking for quality necessitates going round the gardens very frequently, leaving the bushes with a constant layer of young shoots and leaves on (as well as the mature leaves) to perform all the functions of the foliage, and is not so trying as the old method of plucking at intervals twice or three times as great, commonly shaving off the flush to the very buds, so to speak. The shock to and strain upon the bushes was greater under the old method, and the temptation to overtax them more where, with an equal labour force, quantity could be more aimed at, the market not being so fastidious to anything but appearance.

There is no doubt that in too many instances the yield of old concerns, notwithstanding considerable extensions, has not increased proportionately, but in some cases may have even fallen off; but this, I believe, due (1), and I trust mainly, to the altered mode of plucking, which has been more and more for quality, (2) to blights, (3) on hill lands, to injudicious, reckless cultivation, and loss of soil from "wash," (4) injudiciously heavy pruning, and, perhaps, (5) not infrequently to greater scarcity of labour than formerly; or to some or all these causes combined.

Blights.

The remedy for blights, of "selection of seed," as I understand to be recommended by Dr. Watt, is worthy of attention. Disease-resisting stock has accomplished something, at least temporarily, in regard to the vine and potato diseases for instance, after long periods of years, but it is problematical not only to what extent, but how long, this may take to benefit tea. At the best the remedy is not a very encouraging one for most proprietors in so far as it can now be of no benefit to the 450,000 acres or so of existing tea throughout India! I am able, however, to testify to having accomplished something by selecting the most vigorous and most likely to be disease-resisting seedlings, in the planting out of my company's modern extensions.

Red Spider.

In regard to red spider I have had at least fifteen years of sad experience in battling

against it. The soil of the gardens I managed seemed predispose to this blight and favourable to its propagation, and I could not imagine any gardens to be worse with it than they were for years. From 1880 to 1885 this pest was in fact a dreadful scourge; but it has been practically overcome by sulphur. I learn that Dr. Watt has no belief in the cure of blight by any application in that way, but after having applied sulphur in quantities of from three to twenty tons annually since 1880, the effectual cure of red spider, at moderate cost per acre, is with me no longer a matter of opinion, but something that has in my own experience been successfully achieved. It has also to be taken into account that the sulphur not only proves a remedy for the red spider, but for many soils a valuable manure.

The article referred to, entitled "Sulphur as a Cure for Red Spider in Tea," appeared in No. 12 of Vol. I.

Other Blights.

I am not, however, so hopeful of the eradication of mosquito blight by any similar application, because (1) the insect is winged and migratory, and (2) the blight is at its worst, and the remedy would have to be applied, at the season of the year when quality should be at its best. The study of the life history of this insect by several scientists does not seem to have afforded any clue as to a remedy. Some hold the opinion that the prevention of jungle fires by the Forest Department led to the increase of the pest on the gardens in the Terai. Be this as it may, it is not impossible that, like some other crop pests, it might be effectually treated in some intermediary stage in its haunts away from the tea plant.

I have no experience of the white ant, beyond what little I have seen of its ravages when on visits to Assam and Cachar.

There are many other parasites and blights, but those I am familiar with do little harm, are amenable to treatment and easily kept in subjection, or do not spread. One of these more frequently alluded to of late, a white-thread fungus, I have seen a little of, and noticed making its appearance in different parts of the Dooars during my last trip to that district in 1893. I am inclined to attribute this pest to defective preparation of the ground prior to planting, dampness of soil, or excess of shade.

Undoubtedly a great safeguard against the ravages of parasites and blights is to maintain the plants in a healthy and vigorous condition. Still I believe that, wherever there is a large area under any crop, irrespective of the exhaustion of the plants, blights in some measure are sure to follow in time. But it stands to reason that with ill-conditioned plants—from whatever cause—blights must prove the more disastrous.

Manuring.

In most instances all that is practicable over wide areas is "green manuring," and, as material and labour admit, top-dressing with leaf mould, such soil as is available, or leaves and twigs. Upon soil of fair quality, yielding crops of the average present day amount, I am not of opinion that for the permanent rude growth and health of the plants more is necessary. But beyond this the great desideratum would be to be enabled to manure for quality. This can never be accomplished successfully or profitably until it be ascertained what elements are lacking for quality in different soils. In this direction, as far as I am aware, no progress whatever has yet been made. It is the province of the agricultural chemist to investigate this, and place practical planters in a position to supply the elements wanting for quality in each case. Nothing can be of more vital importance to the tea industry generally than such discoveries. Nitrogen may mainly be supplied by "green manuring," but the mineral elements (which I believe will be found essential for quality) must I fear be provided or replenished, principally by means of artificial manures. Nitrogen supplied by "green manuring" will doubtless also render some of the dormant mineral constituents in the soil available for plant food. I am not, however, hopeful of artificial manures ever being profitably applied to the tea plant unless for the production of quality.

"Green Manuring." "Green manuring" has very much to recommend it. I have practised this to great advantage, without the aid of leguminous plants specially cultivated for the purpose, and most extensively (prior to 1877) before the extensive introduction of machinery, when a large force of strong coolies were freed from manufacture, and otherwise available in the Darjeeling

g district, during October and November. As in much else, I d hardly say, results mainly depend upon the time and manner in ich the operations are performed.

hen follow a few desultory remarks on Legumes, which we omit, as Mr. Christison has nothing to say that has not already appeared in these columns.—Ed., P. O.]

Cultivation. To most it will indeed be something novel to hear of tea gardens actually suffering from being kept over clear of weeds! We have heard of gardens in ylon being kept perfectly clear at all times by hand-weeding, but am confident that in India such supererogation must be extremely re. The extreme of cultivation with us may be taken to amount eight or nine forkings or hoeings during the year—that is once in ter, and once a month during spring, summer, and autumn. In is way, I should say, there will be more vegetation turned into the l than by only turning it in once, twice, or thrice a year. In the rmer case the harm is more likely to be done by turning over and oaching" the soil in very wet weather. Wet cultivation is sure aggrivate and may even induce blight. When high cultivation aimed at, a great drawback is, the hoeing must be done not vays in the weather most favourable for it, but when labour is ailable. It would be safer and preferable as a rule, therefore, to ltivate a sward of the low-growing leguminous plants to fertilise e soil, and at all times eschew hoeing or forking in really wet ather.

Scientific Officer. As I have for thirty-five years followed the progress of agricultural scientific research to e best of my opportunities, and, since it has been mooted, taken a en interest in the proposed appointment of a scientific officer for e tea industry, I may be permitted to make a few remarks on so portant a subject.

From all I have learned previously, the proposed expert was to be pointed mainly to make a scientific investigation into the pro- cesses of manufacture and ascertain the deficiencies or otherwise of rious soils and their needs in the form of manure. This has vays been held out as the pressing necessity, and I believe wisely For such investigations a thorough knowledge of analytical emistry, and as far as possible also of bacteriology, is indispens- le, and some experience of practical agriculture and plant life ould, of course, likewise be advantageous. The great tea industry ight undoubtedly to employ such a scientific officer, and *perma- ntly*. These qualifications (or almost similar), and also "a know- dge of the chemistry of plant life," have been recommended by r. Watt formerly. If a second expert be really in contemplation r blights specially, then one with "a thorough training in agricul- re" (but better a horticulturist, I should say) "who has examined to the diseases of plants" might be suitable, no doubt. Such a an as the late Mr. Thomson, viticulturist, of Clovenfords, or of the cottish head gardener type (such as I had the privilege of consult- g about red spider blight in 1877-78), men of valuable practical perience and great intelligence and sagacity would be of vast enefit for blights if the industry could secure their services for a w years. Or from such in conjunction with a competent agricul- ral chemist the best results might be expected.

I am not of opinion that there is much need of an expert specially r blights. All that is required are observant, thoughtful, practical en, methodical, with a scientific cast of mind, and withal, and ove all, enthusiastic. It must be admitted that most gardeners nd agriculturists sent out to tea commence perhaps with too little me experience for this task; still I doubt not there are now veral men connected with tea in India, if set aside to devote their ntire time and thought to the matter, would be able in time to eomplish much. In addition to the agricultural chemist one such ight even be deputed to each group of blighted districts.

There is, I learn, no hope held out of pecuniary aid from Govern- ent. Upon the whole, this may not really be a disadvantage, ecause Government support would reasonably be accompanied by overnment control. If there can be absolute certainty about any- ing regarding this appointment it is this: The Tea Association ould engage the most competent and suitable scientific officer urable, and if such be secured, there is no one in India I have ard of competent to "supervise his work." He should only be nder the direction of sound business men financially, and must

be allowed a free hand in regard to his scientific investigations, being at the same time led clearly and fully to understand that the success of his efforts to benefit the tea industry shall be to his own advantage and *vice versa*. But the Association must not be too impatient of results. No one can doubt that the scientific officer will always be very glad to receive suggestions and information from any one Government may depute, for the good of the industry to interest himself in and furnish information bearing upon the investigations. But, depend upon it, the control or supervision of the scientific researches of a competent officer, as suggested, could hardly fail to mar the efficiency of, if not wreck the under- taking.

Neither can I agree that the use of the Government laboratories would be advantageous as a rule. The scientific officer must have his own laboratories, though only a small bungalow or part of one. It would be impossible, for instance, to obtain any reliable results in the chemical investigation of the process of manufacture unless the laboratories be close at hand. Government would no doubt place their laboratories and apparatus at the disposal of the scientific officer if necessary for any special investigation.

In regard to a suitable "scientific officer," laboratory accommoda- tion, apparatus, and instructions to be framed to insure continuity of research in the event of inevitable changes, I believe the Association could not do better than consult Dr. John Augustus Voelcker (Ph.D., B.Sc., &c.), consulting chemist to the Royal Agricultural Society of England, who devoted thirteen months throughout India to an inquiry into its agriculture (mainly in its scientific bear- ings), and the qualifications, equipment, and appointment of agricul- tural chemists for the country.

ROUND THE BUNGALOW.

NOTES BY "A PLANTER'S WIFE."

Cleanliness in the kitchen. The great question of the day is, without doubt, cleanliness and sanitation, and in no place is it of more importance than in the

kitchen. I remember reading in a paper some few months ago of a lady describing our Indian kitchens as "reeking gipsy-holes;" now, without going quite so far as this, I quite agree with her that there is room for much improvement in the ordinary Indian kitchen. It is a common practice among a great—a very great—number of housekeepers to pay a visit to their kitchens once a week, and they consider their duty in that respect faithfully carried out. Many times have I heard ladies who consider themselves model housekeepers say, "oh yes! I am most particular that the kitchen should be kept perfectly clean and tidy, and the cook knows that every Monday morning at 10 o'clock I shall come into the kitchen and expect to find everything spotlessly clean." This of course is all very well in its way, and you are assured that once a week all things are cleaned, but how about the six other days in the week, when your cook is not expecting you to inspect his pots and pans, can you be sure they are always in the perfect state in which you find them at 10 o'clock on Monday morning when he is expecting you? No, I fancy not; I think myself it is better not to have any fixed day or hour in which to visit your kitchen. My own plan is to go in when my fancy leads me there and expect to find the place and utensils always clean, except of course those which are in use at the time; if cooking is going on, you then have a splendid opportunity of seeing if the food is being prepared in a cleanly manner. If, however, you are determined that things should be well and cleanly cooked, you must yourself be sure that your part towards the kitchen is performed, viz., that

A kitchen as it should be. there is plenty of light and air, and if it is not convenient to have a sufficiency of light from

the windows, have two or three sky-lights fixed in the roof, which will make a vast difference in the lighting of the place. Shelves should also be put up for saucepans, frypans, coffee roaster, etc., to stand on, and under this a row of nails should be arranged on which to hang the bright covers of the saucepans. Another shelf or shelves should be put up for bright cake, jelly, and soufflé tins and moulds, sausage machine and coffee grinding machine (both quite indispensable in a well-regulated kitchen) could also stand here. There should also be preparing, pastry, and dishing up tables

provided. If the ordinary open fireplaces are used, have an arch of brick-work built over them, and a chimney to carry up all the smoke; this makes a vast difference in the cleanliness of the kitchen, but to those who can afford to spend a little money over their kitchen, I would most certainly advise them to purchase a stove; there is no doubt a stove is a great advantage in saving work, as the fire serves to cook the whole meal, consequently there is not the trouble in keeping up the half dozen fires generally used, and the cook is more free to devote his time to keeping the kitchen clean and tidy. The floor should be of asphalt or cement, which is easily cleaned. When you have once arranged all the things as described, all that is needed to keep it sweet and in nice order is a coat of white-wash two or three times a year. Now I have a word or two to say about the saucepans; if expense is no object, nothing will be found better than seamless steel; however, I think in most cases the enamelled ware will be found most excellent and is so easily kept in order. I do not advise copper vessels, though I know they are much used, yet there is always the fear of poison, if they are not kept in thorough order. The following is an excellent way of cleaning copper vessels.

To clean copper vessels.

Soft-soap and rottenstone, made into a stiff paste with water, and dissolved by gently simmering in a water both keep on with a woollen rag, and polish with dry whiting and rottenstone. Finish with a leather and dry whiting.

A washing up room.

Washing up dishes should never be allowed in the kitchen, it is better to have a small room outside for this purpose, by the side of the kitchen if possible. We will suppose there is a window on one side of the room, and under this a masonry sink should be built and cemented over; a hole should be made for the water to run through, and covered with a piece of perforated zinc to prevent any pieces from getting into the hole and blocking it up; the water should then be allowed to run through into a drain outside and well flushed every day. The actual sink should be about 2 feet 6 inch in height and 3 feet in length, and a solid piece of masonry on either side about 18" x 18"; the top of this should be cemented over and serves for a table; one side for putting the dirty things and the other for putting the things to drain as they are washed; there should also be a rack for draining the plates in after washing them, and this might be fixed on the wall at the right hand side of the sink.

Be careful with gelatine.

I would warn my readers to be particularly careful in making and cooling all puddings in which gelatine is one of the ingredients. It is a well-known fact that medical men when they want to secure minute organisms for investigation expose gelatine to the air, or where germs are, and it quickly attracts and holds them. But on this account we need not forego our creams and jellies, as on medical authority we are assured, that if they are covered, if only with clean muslin, they are quite safe.

To make coffee.

The following recipe, which has been recently sent to me, for making coffee will be found worthy of trial:

You will make your brew for to-morrow this evening, and this is how you will do it. First warm your jug, then measure out your coffee, and to each tablespoonful of coffee allow one cupful of boiling water. Fold a clean cloth to several thicknesses, place it over the jug, and leave it standing all night. The next morning strain it off through a cloth into a clean jug, from thence into a bottle and cork it.

You will have clear strong coffee, available at any moment by the simple process of heating, but remember that with regard to the heating you do not on any account let it boil.

Legacy Pudding.

Put 2 tablespoonfuls of Lard into
5 " Flour
3 " Sugar
1 " Baking Powder
 $\frac{1}{2}$ lb. of raisins, 2 eggs, 1 cup of milk,
mix well, and bake 20 minutes. Serve either hot or cold.

Sardine Fritters.

Drain the sardines thoroughly from the oil, season well with cayenne pepper on the inside, opening them most carefully with a knife and then closing them again. Then dip in butter, and fry 5 minutes in boiling fat. They should be a delicate brown when drained from the pan.

THE NUGGET OF GOLD ORE.

"THAT," said my friend, in reply to a question of mine, "is a very large and very rich nugget of gold ore. It was taken many years ago from a mine in Australia."

"How much is it worth?" I asked.

He looked at me with a shrewd smile and replied: "It is worth just nothing at all."

I thought that a queer thing for him to say, but asked no more questions.

Two years later I again visited his house in London, and this time I missed the big nugget from the shelf where I had first seen it. But I asked no questions. Perhaps, recalling the incident of two years before, my friend said: "I have something to show you, and, opening a closet, he produced a magnificent gold vase, remarking: "That nugget of gold ore has taken this form. Exclusive of the labour involved in the transformation, the gold alone is now worth £100."

What curious similitudes there are between things essentially unlike! Here is one which it may be instructive to follow up. It is suggested by the following sentence from a woman's letter:—"In spite of all the nourishing food I took nothing seemed to give me strength."

Now, why was that? Perhaps the history of the previous three years of her life may help to account for it. In January, 1890, she had an attack of influenza which, she says, left her low, weak, and languid. So far as we are able to ascertain, influenza is caused by a certain poison in the blood developed during peculiar conditions of the atmosphere. Its early symptoms are those of a fever; they are always sudden and often alarming. Yet, as in nearly all cases it ends in recovery in a week or two, it does not explain the mystery of Mrs. Westall's continued weakness and prostration.

She tells us that her appetite was poor, and that eating was immediately followed by great pain in the chest, back, and sides. Hoping to overcome this state of things she took much nourishing food. That an increase of strength should result from the eating of plenty of good food would seem reasonable. How else can one ever gain strength? Yet, strange to say, no such result followed. On the contrary, the pains became worse, so that—to use her own words—she was "completely racked with pain" all over her, and so weak she could scarcely put one foot before the other. Besides this the condition of the stomach was far from encouraging. That organ is the source of all power in the human body, and should feel warm, comfortable and quiet. In this lady's case it was full of uneasiness and pain. She speaks of a craving, gnawing, sinking sensation in it, which was not relieved either by food or by any medical treatment. Certainly, something quite different from a former attack of influenza went to the making of that; we must look deeper to find the real trouble.

Chemists often determine the character of a poison by observing the colour it creates when applied to litmus paper; and—in addition to the general symptoms—it is sometimes possible to tell the nature of a disease by taking notice of what cures it. Now there is one universally known remedy which never fails to cure one subtle, comprehensive, and yet deceptive disease. Happily it was finally employed in Mrs. Westall's case.

In concluding her letter, dated December 1st, 12, Rucklidge Avenue, Willesden, London, N. W., 1892—she says: "At the time when my condition was very critical and my family very anxious, my son-in-law, Mr. Deacon, of Shepherd's Bush Road, told me how, in an illness of his own, he had been cured by Mother Seigel's Curative Syrup and advised me to begin using it at once. I did so, and soon my appetite returned and my food digested; and by the time I had consumed two bottles I was strong as ever, and have kept in the best of health ever since.—(Signed) Yours truly, Mary Westall."

This remedy, as the public is well aware, is advertised to cure indigestion and dyspepsia and its consequences—and nothing else. Yet these consequences include nearly every ailment with which we are familiar. Even influenza seldom attacks any save those whose blood is first poisoned by indigestion and dyspepsia.

And as to that nugget of gold ore? Ah, yes.—Gold is worthless until it is manufactured. Food is useless unless it is digested. Between the ore and the vase is the workman. Between food and strength also a workman—the stomach.

MARKET SUPPLEMENT.

SATURDAY, MARCH 6, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (February 12, 1897)
rs.—A very firm tone has prevailed at Public Sale this week, and all
scriptions of new crop coffee have met a strong demand and realized
extreme rates.

About 1,200 bags East India were offered and attracted keen competi-
n, the bold colory qualities being disposed of at phenomenal values.

Firm prices were also obtained for the superior grades of Costa Rica
Columbian, whilst the commoner kinds sold readily at previous rates.

In consequence of the continuance of the heavy receipts Futures have
n rather easier during the week, and at the close quotations show a fall
1/- to 2/- since our last.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week
ing February 10th, 1897, says:—Bank rate 3%. Bombay Exchange
ses at 1s 3½d. Brazil Exchange 8½d. Rupee paper 3½% 62½. Silver
1½d per oz.

A good demand continues to prevail at auctions, and prices are
ly maintained for the ordinary kinds, whilst fine colory and middling
e dearer. The first few consignments of new crop Coorg and Mysore
alized very extreme rates. The news from almost all parts of India
int to a considerable reduction of the previous estimates, and the total
old this year will not probably be more than about half last year's.

According to Messrs. Duuring & Zoon the European stocks on the 1st
t. showed an increase of 7,950 tons, and the visible supply a decrease
3,980 tons, the figures being 106,700 tons and 235,080 tons respectively,
ainst 98,750 tons and 239,060 tons on the 1st January, 1897.

Daily receipts have averaged 7,857 bags in Rio, and 10,000 bags in
antos.

Futures continue quiet, and a decline of 3d to 9d has occurred, viz.:—
od average Santos in Havre, March delivery closes at fcs. 62.00, in
mburg pf. 50½, and No. 7 low ordinary Rio in New York \$9.20.

To-day's London official quotations are:—

	Feb.	March	May	Sept.	Dec.
Rio	47/3	47/-	47/3	47/6	48/3
SANTOS	50/-	50/3	50/6	51/9	51/9

We quote:—

Ceylon, mid. to good mid.104/@117/	Costa Rica, mid. to fine... 93/ @110/
Do. small to low mid. 87/ „ 102/	Do. ord. to low mid. ... 76/ „ 91/
East India, mid. to good	Jamaica, good to fine ord. 73/ „ 82/
mid... 97/ „ 106/	Do. greenish to fine
Do. small to low mid. 87/ „ 94/	colory... 88/ „ 125/
Guatemala, mid. to fine... 93/ „ 105/	African ... 42/ „ 44/
Do. good ord. to low	Columbian, ordinary ... 66/ „ 71/
mid... 74/ „ 92/	Do. good ord. to
Salvador, good ord. foxy	low mid... 72/ „ 93/
greenish... 73/ „ 74/	Do. mid. to fine... 93/ „ 107/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
Rio	2,518,000	1,823,000	1,691,000
SANTOS	3,992,000	2,603,000	3,154,000
	6,510,000	4,426,000	4,845,000

Auctions:—

7 casks and tierces 11 barrels and bags Plantation	
Ceylon	@ 90/ @ 116/
1,119 bags { 601 bags Coorg, new crop ...	92/ „ 121/
East India { 37 bags Mysore, new crop ...	103/ „ 114/6
{ 481 bags Wynaad, new crop ...	85/6 „ 93/6
187 barrels 71 bags Jamaica, chiefly sold ...	60/6 „ 95/
172 bags Costa Rica, new crop ...	87/6 „ 108/6
695 bags Guatemala, chiefly new crop ...	89/ „ 106/6
20 bags Vera Paz bought in.	
432 bags Columbian ...	64/6 „ 106/
40 bags Guayaquil bought in.	
109 bags Bolivian bought in.	

44 bags Puruvian bought in.
730 bags Nyasaland ... @ 75/ @ 96/6
142 bags Palembang bought in.
348 half-bales Mocha bought in.

On Quay Terms:—

141 bags washed Santos, without reserve ... „ 66/6 „ 68/6
313 bags Santos, part without reserve, sold ... „ 51/ „ 55/
500 bags Rio bought in.

Landed last week 390 tons. Deliveries 491 tons. Stock 7,938 tons.
Do. last year 212 „ „ 38 „ „ 7,471 „

THE UNITED STATES.

	1st February.	1897.	1896.
Stock	26,940 tons	25,880 tons.	
Afloat	22,770 „	14,700 „	
Visible Supply	49,710 tons	40,580 tons.	

Value No. 7 9½ cents 13 cents.
January.

	1897.	1896.
Imports	24,650 tons	22,940 tons.
Deliveries	27,590 „	25,000 „

BRAZIL.

	Stocks 31st January.	1897.	1896.
Rio	305,000 bags	244,000 bags.	
Santos	555,000 „	362,000 „	
Total ...	50,590 tons	35,650 tons.	

Receipts 1st July, 1896, to 31st January, 1897.

Rio	2,438,000 bags
Santos	3,889,000 „

Exported 1st July to 31st January.

	1896-7.	1895-6.
Rio to Europe	605,000 bags	530,000 bags
„ the States, &c.	1,445,000 „	1,065,000 „

Total from Rio ... 2,050,000 bags 1,595,000 bags

Santos to Europe	2,500,000 bags	1,690,000 bags
„ the States	920,000 „	650,000 „

Total from Santos ... 3,420,000 bags 2,340,000 bags.

LONDON.

	Quotations 1st February.	1897.	1896.
Middling Plantation Ceylon	102/6	99/	
Fair channel Rio, floating terms	47/	59/	
Good channel do	51/	63/	
Good average Santos do	49/6	64/	

WORLD'S VISIBLE SUPPLY.

	31st January.	1897.	1896.
Europe	134,170 tons	119,110 tons	
United States... ..	49,710 „	40,580 „	
Brazil	50,590 „	35,650 „	
Total ...	234,470 tons	195,340 tons	

December 31st (1896), 238,360 tons (1895), 204,530 tons.

SUMMARY COMPARED WITH LAST MONTH.

European Stocks	8,050 tons Increase.
„ Visible	4,340 „ „
United States Stocks	2,940 „ Reduction.
„ Visible	3,110 „ „
Brazil Stocks	5,120 „ „
World's Visible	3,890 „ „

SUPPLEMENT TO PLANTING OPINION.

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of February 12th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1896-1897...	1,225,966 packages.	784,301 packages.	28,682 packages.
1895-1896...	1,172,760 „	689,410 „	37,372 „

Total quantity (in lbs.) of British Grown Tea taken by the United States & Canada during each of the last six years.					
1896.	1895.	1894.	1893.	1892.	1891.
9,474,019	7,792,185	4,723,370	3,981,837	3,075,900	2,334,302

INDIAN & CEYLON TEA TAKEN BY NORTH AMERICA DURING EACH OF THE LAST SIX YEARS.

INDIAN TEA.						
	1896.	1895.	1894.	1893.	1892.	1891.
Re-exports from U. K.	...	1,782,181	1,719,814	1,420,205	1,532,573	1,389,281
Transshipments <i>via</i> U. K.	...	3,123,224	2,299,781	896,025	507,674	147,145
Direct exports <i>via</i> China (about)	...	300,000	40,000	112,000	71,000	50,000
Total lbs. ...	5,205,405	4,059,595	2,428,230	2,111,247	1,586,426	1,342,326
CEYLON TEA.						
	1896.	1895.	1894.	1893.	1892.	1891.
Re-exports from U. K.	...	2,732,208	2,533,427	1,769,204	1,324,182	828,940
Transshipments <i>via</i> U. K.	...	1,165,926	880,732	370,414	232,771	61,304
Direct exports <i>via</i> China	...	370,480	321,431	155,522	103,098	163,040
Total lbs. ...	4,268,614	3,735,590	2,295,140	1,870,590	1,489,474	991,984

Indian. Offerings were on a rather smaller scale and passed without material change in prices, good Teas still continuing in strong demand. The following averages are worthy of note:—"Selimbong," 1/7½; "British Darjeeling Co. Thurbo," 1/5½; "Poobong," 1/4½.

Week's av. Tea sold on Garden Account, 1897, 28,059 pks., av. 9½d. 1896, 24,481 pks., av. 9d. 1895, 20,998 pks., av. 9½d.

	1897.		1896.	
	Pkgs.	Price.	Pkgs.	Price.
Assam	15,305 p	10½	10,512 p	10½
Cachar and Sylhet	7,191 p	7½	8,826 p	7½
Chota Nagpore	...	...	133	5½
Darjeeling	2,012 p	1/2½	1,881 p	1/0½
Dooars	2,374 p	7½	2,209 p	7½
Kangra Valley, &c.	233 p	6½	303 p	7½
Neilgherry	...	...	...	...
Teral	268 p	8½	47	6
Travancore	511 p	8	570 p	8

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	4½d	4½d	5d	4½d
FANNINGS. (Red to brown, strong rough liquor)	4½d	4d	6d	4½d
BROKEN TEA. (Brownish to blackish, strong liquor)	6½d	6½d	7½d	5½d
PEK. SOUG. (Blackish greyish, useful liquor).	6½d	6½d	8½d	6½d

39,958 pkgs. INDIAN } Total 57,399 packages were offered in public
15,250 " CEYLON } auction this week.
2,191 " JAVA }

The progress made in the use of Indian and Ceylon Tea in North America is very encouraging. A steadily increasing quantity has been taken during many years back.

The advance made in 1895 was considerable, and it is therefore the more satisfactory to find that the 1896 figures show a still further important increase.

No account has been taken of direct imports from India and Ceylon except those *via* China, as it is difficult to say with accuracy how much is included in the transshipments *via* United Kingdom.

Ceylon. A very small sale took place this week, and consequently the Teas met with strong demand and competition was good, the market being steady throughout. The official estimate of the Ceylon crop for 1897 is 117½ million pounds. The following averages may be mentioned:—"S T Co. St. Leonards," 1/1½; "Campion," 1/-. Av. for week rather over 8d. agst. 8½d. for same period last year.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6d	6½d	8d	6½d
PEKOE (Ordinary leaf, little twist; fair liquor)	7½d	7½d	9d	8
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5d	5½d	7½d	5
PEKOE (Somewhat bold leaf; indifferent liquor)	5½d	5½d	7½d	6

Java. The Teas offered were mostly of indifferent liquor, and consequently were not strongly competed for, many parcels being withdrawn from the sale.

Bank Rate 3 per cent. Exchange on London three months sight. Calcutta 1/3½, Colombo 1/3½.

PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9½d.) February 12, 1897.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Travancore	511 p	8												
Arnakal	101 p	8½	10	9½	34	7½	35	10½	8	6½	2	5½	12½c	7½
Bon Ami	335	8			85	7	157	8½	37	6½	6	5½	50	5½
Brighton	40	5½			9	6½	8	7½	19	5			4	4½
Wallardi	35	9½			8	7½	15	11½	12	6				

PLANTING OPINION.

OAKES AND CO., (Limited), OOTACAMUND,

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Touching a shipment of Indigenous Tea seed, an experienced Indian Planter writes from Madura District dating 24th June 1896: "Just received the Tea seed; it has arrived in perfect condition, notwithstanding unnecessary delay in transit, and does you credit. Please book me for five maunds as early next May as possible."

TELEGRAPH ADDRESS:

WILLIAM,

Viá Colombo, Heneratgoda, Ceylon.

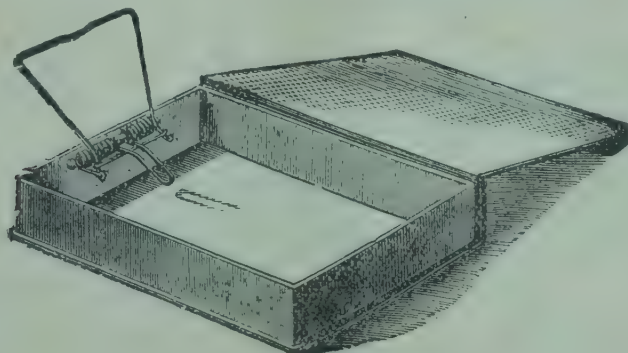
J. P. WILLIAM AND BROS.,

TROPICAL SEED MERCHANTS,

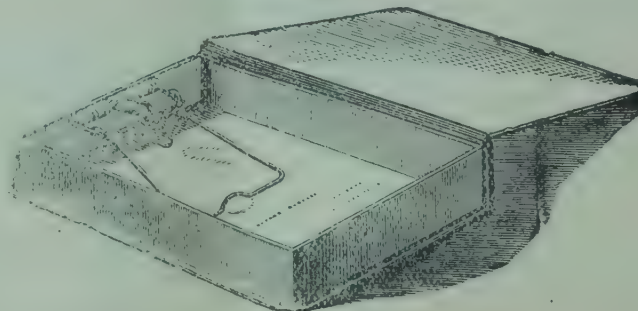
HENERATGODA, CEYLON.

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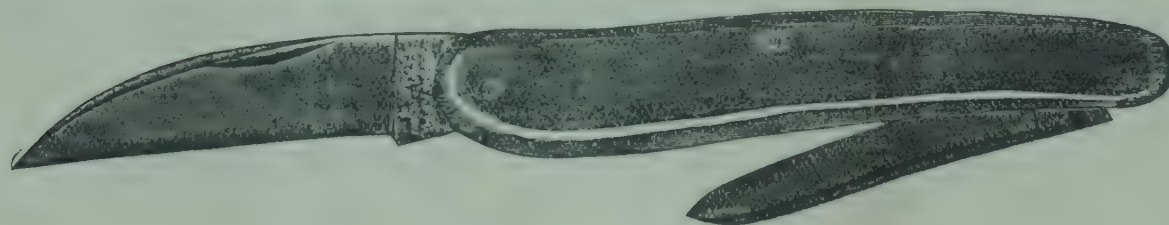
OPEN.



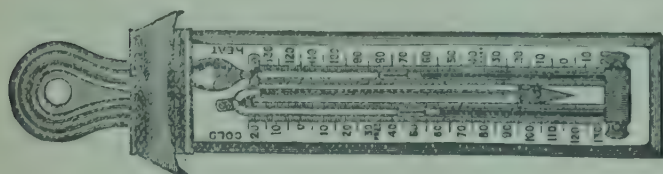
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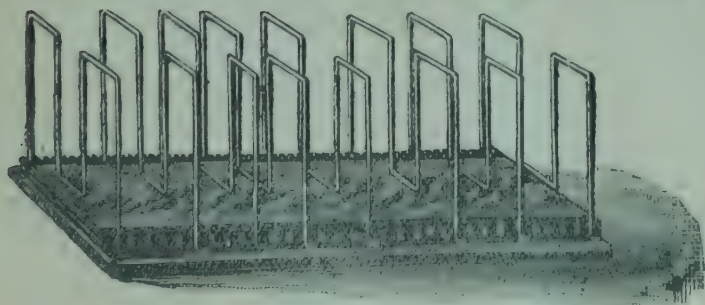


P 236.—Rodgers' two-bladed knife (as illustrated) with stag-horn handle Rs. 2



Hicks's Mean and Maximum Thermometers, as illustrated Rs. 8

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PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, MARCH 20, 1897.

[No. 6.]

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the end April 1897.

Travancore. 15th March.—*Weather*.—Very hot, otherwise fine. *Rainfall*.—This month 8. Total since 1st January 3'83". *Crops*.—Tea flashing splendidly. *Plant-diseases*.—Nil. *Health*.—Fever commenced. *Labour*.—Fairly plentiful.

Nilgiris. YEDAHALLI.—Not much rain fell here in February, most 37 cent. gauged on one estate; so no harm was done. Blossom very forward, as it is generally throughout the district. Sea-breeze began earlier than usual this year, and blows rather too strongly between 3 and 7 P.M. Days clear and hot. Ragi 16 seers, rice 11 seers.

Nellampathy. *Weather*.—No more rain since last I wrote, but the last week or so the mornings have been very cloudy. *Plant-diseases*.—Very little "leaf" showing now. *General Health*.—Bad. Fever very plentiful, but

no more cholera reported. *Labour*.—More coolies available than are wanted. *Interesting Items*.—Water now very short.

North Wynaad.

MANANTODDY, 16th March.—*Weather*.—For the first half of March has been pleasant, though thermometer showed a pretty high temperature occasionally during the day-time. Sea-breezes (sometimes strong, P.M.) prevailed and dewy nights followed by mist in the early morning and more or less of clouds thereafter. On 5th, a drizzling shower fell during night. *Crops*.—Pepper being gathered. Coffee all despatched. *General Health*.—Fair, a little fever about. *Grain*.—Ragi 25 and rice 12, large seers per rupee. *Interesting Items*.—No gratis advertisements from North Wynaad for suitable agents to procure lands. That Octopus, the Forest Department, is in a great hurry, apparently, to grasp as much as possible of the splendid heavy forest here before the advent of the expected tea-planter.

S. E. Wynaad.

PUNDALUR, 17th March.—*Weather*.—It is very hot during the day and cool at nights. *Crops*.—Under shade, the blossom that was set doing well and out in the open lingering from want of rain. *Plant-diseases*.—Nil. *General Health*.—Fever prevalent among the coolies. *Labour*.—Ample. Grain is getting slightly dear. *Interesting Items*.—This district has got very good roads communicating with Mysore, Nilambur, Coasts and Ootacamund, and the roads are always kept up by the Local Fund Board. Nilgiri District in good order, and the iron bridges are very strongly put up, and at any time the traffic is carried on without any trouble.

Mysore.

MUDGIRI, KADUR, 16th March.—*Weather*.—Since the small showers of February 17th and 18th, no rain has fallen, and planters have an anxious time, for the rain, though 25—50 cents, brought out blossom on many estates. The second and best blossom is to follow, and rain is wanted badly. A good shower fell around Kadur station on the 14th. *Crops*.—Except on a few estates, crops will not be "bumpers." Leaf-disease has done its damage and spoilt the good wood. *Plant-diseases*.—Leaf-disease has all gone and trees are making new wood. *General Health*.—Good,

few cases of fever about. It is rumoured the Plague has reached Mangalore. *Labour*.—On most estates all coolies have been paid off and sent below Ghauts. *Interesting Items*.—The opening of the Saklaspur Club take place on the 24th, and a volunteer meeting. On the 29th, the volunteers march in stages to Mercara for a sham fight and camp of exercise.

GENERAL NOTES AND ARTICLES.

BUSINESS MANAGEMENT OF ESTATES.

It is said nowadays that the day of the "small planter" is drawing to a close in South India, much in the same way already observed in Upper India and Ceylon. Small estates are sold to large owners or companies, who by means of their larger capital and area under cultivation are able both to work more economically and to withstand with comparative ease a succession of bad years that crushes the small owner. In the good old days when the margin of profit ran high, every planter almost was an independent owner, managing his estate himself, and reaping all the benefits therefrom. But now that profits are smaller and more precarious, the risk and responsibility attendant on the ownership of an estate are such as to deter many from embarking in the venture. The easier and seemingly less precarious mode of obtaining a living as manager or superintendent is preferred, and what savings are accumulated, too few, alas, generally find their way to a bank. The concentration movement in South India is however markedly slower than in the tea districts of Upper India or Ceylon, as the long list of independent proprietors given in our Directory clearly shows. Yet the tendency, though only gradual, has set in unmistakeably, and every year the movement will gather in force and volume.

We would ask our readers if this tendency of "small owners" to relinquish their independence and become hirelings (we use this word in no offensive sense) is inevitable? It is true that the margin of profit is not a wide one nowadays, and that a succession of bad years is apt to strain the financial resources of small owners to the breaking point. Yet on the other hand, the managing owner has a great advantage over the absentee proprietor, be he a private individual or a shareholder in a company. The estate which he works is his own, for every rupee spent he will see that full sixteen annas of work is obtained in return. The welfare of his estate means all the difference between penury and comparative affluence, his whole heart is in his work and all his energy and resources are called upon to forestall or overcome his difficulties. With an absentee proprietor's estate it is different. As long as things go fairly well, the manager has no need to trouble himself, a few more rupees spent is neither here nor there, a fair average is all he looks for as a rule, and with this the owner is, or has to be, content. A change of managers is always possible, but seldom advisable. The managing proprietor should therefore get a much larger profit from his estate than the absentee owner either does or can obtain. Why then has he so often to give up the struggle, and see his estate, on which he has lavished all that his skill or forethought could suggest, lapse into the hands of others?

Is it a series of bad years? Then surely he should, by means of his greater profits, be able to weather the storm as well as his neighbour, who if he has more estates, has

proportionately more calls to meet. The latter has usually it is true, also proportionately more reserve capital, but should not the larger profits of the former counterbalance this? They should, in truth, but for lack of sheer business capacity, it is far otherwise. We come here upon the rock on which so many once prosperous small owners have been wrecked. And yet it is one, which, it would seem, requires a grasp of only the most rudimentary principles of business to avoid with ease.

We will take the case of a man, a trained planter, beginning on his own capital. According to the extent of his capital he either buys an estate already in bearing, or opens out a new one. In the latter case he often makes the usually fatal mistake of opening out more land than he can afford to work; trusting to the first year's crop or mortgage on the clearing to carry him along until the estate is in full bearing, and set him right again. We will suppose that he escapes this difficulty, and finally gets his estate into bearing with sufficient capital to keep it going for a more or less limited period. For a few years he draws a moderate but regular income and has every reason to be content with his lot. Then comes an unhappy bumper, and with it the greatest danger that has yet faced him. Here comes the parting of the ways, and he must finally decide on the principles that are to guide his planting career. Shall he yield to the temptation of enjoying his good fortune to the full, take a trip home and barely leave sufficient money for the following year's expenses? Or shall he wisely bank the major portion of the surplus, and merely enjoy the customary "manager's bonus"? In other words, he must decide whether to live from hand to mouth, and see his income fluctuate with every rise or depression in crops and market, or to be content to regard as his income, only that sum of money which is represented by a fair and safe interest on the capital originally invested. We suppose that fifteen per cent. is the utmost limit of safety in tropical agriculture, it would be wiser far to content oneself with twelve or even ten. Every anna he gets above this amount should be religiously banked to equalize inevitable depressions in succeeding years. If not the end of such a planter is swift and sure. The year succeeding a "bumper" will be a blank one, and with an estate needing more lavish expenditure than before and bare exchequer to furnish its requirements, a second or third bad year sees the estate and its owner part company for good and all.

There is yet another phase of the difficulty, to which great attention was lately paid by the *Times of Ceylon*, with regard to the so-called "reserves" of certain of the local tea-companies. In the case of the companies, after paying a satisfactory dividend from the yearly profits, the surplus is carried to a reserve fund. The manner in which the fund is invested calls for our contemporary's grave censure. Instead of investing in undertakings or institutions, the prosperity of which will not be affected by the fate of the tea-industry, so as to equalize the dividends in bad seasons instead of so doing, we say, these "reserve funds" are locked up in the purchase of further tea properties. The non-wisdom of such a course should be patent to all.

It will become still plainer when we apply it to the case of the planter whose operations we have been commenting on. We will suppose he is canny enough not to spend the "bumper surplus," but yet not wise enough to invest

Coonor.

Tea land, &c.

Tea land at high elevation, also coffee land, for sale, or partnership to open. Particulars to

T. C.,

Editor of this Paper.

u. c.

To Small Capitalist.

FOR SALE Rs. 6,000.—A newly-built brick Mangalore Tiled Bungalow, in about 50 acres of land, suitable for fruit growing or coffee cultivation under shade. Rain-fall 80 inches. Only 3 miles from Taluk Headquarters, Govt. Dispensary and Post and Telegraph Office. A good road leading to bungalow only $\frac{1}{2}$ mile off Government Road.

Apply sharp BUNGALOW, EDITOR, "*Planting Opinion*," Coonoor.

English Home and Education.

A lady living at the seaside, in the healthiest part of County Cheshire, with her three daughters, who have had highest certificated education, are willing to receive and educate English children, either boys or girls, any age up to 12 years.

A thorough knowledge of English, French, German, Music, Drawing, Dancing imparted to the pupils.

Young and delicate children most concientiously looked after.

Terms and particulars on application to

u. c.

Z. Z., C/o Manager.

SOUTH COAST OF ENGLAND.

St. Leonards on Sea, Ancaster House.

English Education.

The Rev. Frank R. Burrows, M.A., Trinity College, Oxford, receives Boys to prepare for Public Schools and Royal Navy. Ages 7 to 14. High and healthy situation, home comforts. Terms 50 to 70 guineas per annum. References kindly permitted to, and particulars to be had from, C. A. Martin, Esq., LL.D., Darjeeling, and Lt.-Col. G. C. Dobbs, I.S.C., Commissary-General, Bengal Command, Naini Tal.

Coffee Estate.

FOR SALE.—A valuable Coffee Estate, in a good district, 100 acres in bearing, 25 young, 55 acres now being opened, 300 acres forest.

u. c.

Apply EL. L.,

C/o Editor.

Eucalyptus Preparations.

Eucalyptus Boiler Disincrustator at 12 annas per gallon, in 40 gallon barrels.

Eucalyptus Oil at 3/8 per 27 oz. bottle.

Apply T. BROWN,

"Glendale," Coonoor.

Coffee Land.

FOR SALE.—On easy terms, a block of 1,000 Acres of land in Wynaad, suitable for Tea.

Apply "SOUTH,"

C/o Manager, *this Paper*.

Coffee Land.

FOR SALE. A BARGAIN.—A block of 210 acres of good Coffee Land in the Nilgiri District, planted with 20,000 4-year old coffee trees. No difficulty about labour. Grazing plentiful. Manure 1 a. per bushel delivered.

Apply to "BARGAIN,"

u. c.

C/o Editor, P. O.

Wooden Bungalow, &c.

FOR SALE.—A wooden bungalow containing a quantity of weather boarding, rafters, door frames, window frames, doors, windows, &c.

Two Iron water-wheels. A quantity of powdered sulphur. A cash chest.

u. c.

Apply P. GUARD,

Cherambadi P. O., Wynaad.

Rifle.

In perfect order.

u. c.

FOR SALE.—450 Express, mail canvas canvas re-loading and re-sizing Tools and some ammunition.

Apply 303, MANAGER, *Planting Opinion*.

Good Land.

FOR SALE.—Block of 1,000 acres, situated the best district of Wynaad for the ear showers; average annual rainfall 80 inches, with an average in January February and March of over 5 inches.

Government Road from Coast to Mysore bisects the Property which moreover bounded on the North and West by large rivers, each containing ample power throughout the year to drive Overshot Water Wheels.

The greater portion of the land faces North, North-East, and North-West, with a very easy lay, and the soil is admirably fitted for the growth of Arabica and Liberian Coffee, as well as of Tea. For further details apply to 303, C/o MANAGER, *Planting Opinion*.

u. c.

Coffee Seed extraordinary.

After two years' careful investigation I have been able (by a process which I shall not for obvious reasons, divulge) to produce a coffee seed containing the very excellent percentage of 7 per cent. of ash with the parchment, and 3.71 without, as compared with 2.6 per cent. of ash with and without parchment of the ordinary seed. The analysis was made by Mr. D. Hooper, of Ootacamund. Price Rupees Fifty per bushel, cash with order.

L. W. GREY,

Pykara, Nilgiris.

Bangalore Orchard.

FOR SALE £500 STERLING.—An orchard in good order within Civil and Military Station Bangalore S. India, in a seven-acre block. Water available; contains a nice strongly built 8-roomed Cottage, with large outhouses and stables for 3 horses.

Estimated annual rental value £18. Fruit and other crop return per annum.

Further particulars, apply

u. c.

ORCHARD,
C/o "*Planting Opinion*," Coonoor.

WANTED.**Liberian Seed.**

Wanted Liberian Coffee Seed, two or three bushels. Apply, stating the month in which it usually ripens to H. PILKINGTON, Koppa, Kadur District.

Sirocco.

Six.

Wanted to purchase a small second-hand Sirocco in good order. Send full particulars and prices to ALPHA B., C/o *Planting Opinion*.

Partner.

u/c.

WANTED.—A Partner to extend existing Tea and Coffee. Good District, many facilities.

PARTNER, C/o MESSRS. BURNETT & SON,
Calicut and Tellicherry.

Sambur and Bison horns.

Seven.

Wanted few pairs large horns. Particulars and price to

"S. S. S.,"

C/o EDITOR, "*Planting Opinion*."

Cook.

ing to qualifications.

u. c.

WANTED.—A Cook for Bachelors' Bungalow. Second Servant kept. Salary Rs. 12 or 13 according to qualifications.

Apply

Q., C/o P. O.

Bobbery Pack.

u/c.

WANTED dogs for a bobbery pack. Ton essential.

Apply A. H. SHARP,

Devikulam.

it altogether outside of his planting interests. He follows instead the example of the companies alluded to before, and locks up his "reserve" in further extending his estate. The result of this proceeding is that his responsibility is increased in direct ratio to the expenditure of his capital, and that consequently, acre for acre, he is just as ill prepared to meet emergencies as his spendthrift neighbor planter who reddens his little universe for a brief time in a gorgeous bumper conflagration. At first sight this is not obvious. He owns a larger estate than the latter, other things being equal, a consequently more valuable property. If he sells at once, he is undoubtedly better off, but if bad years come, as come they must, every extra acre added up forms so many extra calls on his resources. How can he therefore escape the fate that overtook the spendthrift?

Our observations many seem trite to outsiders, but we are specially addressing young planters starting in life on estates of their own. Not a few old ones, too, might appreciably benefit by our advice. To conclude, an estate should be looked upon as an investment, not as a speculation, and to point out how this may be done with the greatest amount of safety, has been the purpose of our remarks.

Some months ago we distributed a few packets of seeds to enquirers. Will the experimenters kindly give us the results of their trials?

A correspondent elsewhere asks for information on the subject of guano in India. In view of the great importance of obtaining nitrogenous and phosphatic manures at a low price, the matter would certainly seem one for the U. P. A. to take up. There must be huge natural deposits of this valuable fertilizer stored up in caves in different parts of the country, and we are sure that Government would gladly supply the planting community all the information concerning them in their power.

The great value of the work the United Association is doing cannot be too often insisted upon. The latest instance of its usefulness is clearly shown in the manner in which the Government of Madras was led to reconsider its decision regarding the extension of its cinchona plantations. We regret we cannot find the space to reproduce the *Madras Mail's* recent articles on the subject. But we may mention that they have conclusively proved it by the logic of the figures supplied by our Planting Member of Council, the Hon'ble Percival Hodgson, to Mr. Standen, Government Quinquina Committee, that the reversal of their previous decision was justified.

We lately addressed Mr. D. Hooper on the subject of the economical use of cinchona and coffee prunings, with especial regard to the manufacture of caffeine. His reply is as follows:

After considering the question as to how far a planter can be engaged in the manufacture of caffeine, my opinion is that beyond drying the powdered leaves he can do nothing. The manufacture of a concentrated preparation either liquid or solid on the estate would be impracticable. The powdered leaves would be less bulky

than the leaves of tea usually packed, and there would be a saving in their freight if exported in such a condition. The grinding of the leaves in a dried state is the first step in the manufacture of the alkaloid and this simple process could be carried out by nibbing the sun-dried leaves through a sieve and rejecting the woody portion of the bushes."

So with freight and packing charges running to 2d. per lb. and the sale price of such powdered prunings not being probably over 3d., the apparent margin of profit is not great. It is a question, however, whether the local manufacturing chemist might not be approached with advantage on this subject.

The Trust Fund.

In our last issue we noted Mr. Acworth's proposal to devote a portion of the U. P. A. Reserve Fund for the purpose of presenting an address and casket to the Queen-Empress. A responsible and well-known Mysore planter, in a letter reproduced in our correspondence columns, expresses his strong objections that the Fund should be used for any such purpose. He proposes instead that a special subscription be collected for the purpose. There is undoubtedly a good deal of reason in this objection, which is one based on the principle that the Fund should be used strictly for the objects for which it was raised. Perhaps the majority of subscribers to the Fund will hold that an address of loyalty and esteem does not constitute an attempt to "advance the interests of the Planting Industry in Southern India," though, as we have already pointed out, anything that brings our Industry into commendable prominence is of distinct, if indirect, benefit generally. We are glad to note that there is no opposition to the presentation of the address itself, and that, after all, is the main thing.

Roads on the Shevaroy.

Shevaroy planters are expressing, as well they may, strong dissatisfaction with the action or rather inaction of Government on the matter of providing roads for this champion little district. The Salem Taluk Board apparently does all it can to deprive the Shevaroy of its proper share in the funds for the construction and repair of new roads. Planters are always or nearly always told that no funds are available; and, even in cases where they are willing to spend their own money, endless delay and trouble are experienced in simply obtaining official sanction to take the work in hand. Owing to the increase in traffic and the large extensions of coffee, an improvement on the present shamefully primitive jungle tracts is absolutely necessary. It has been said that planters are always wishing that Government should do everything for them, but here is a case where planters are willing to provide the funds themselves if only official sanction is accorded, and that sanction is often wilfully and vexatiously withheld. We intend taking up this matter again shortly, and hope the President of the Taluk Board will ere long awake to a proper recognition of his functions.

A hint to Government.

Hitherto the interest that has been attached to Mr. Nelson's now well known advocacy of *E. lithosperma* for manuring purposes, has centred round its value for plantations. Now we learn that he has achieved a yet further success, and one which may have a most important bearing on the question of enriching the impoverished soils of the plains. That orna-

mental and expensively useless institution, the Madras College of Agriculture, might do worse than carry out careful experiments with this natural fertilizer. Mr. Nelson writes:—

"*E. lithosperma* has served afresh a triumph in a new direction, viz., as a manure for paddy. I gave a man a bandy load of *E. l.* loppings on the understanding that he was to use it separately and comparatively with the other green manures they use. He has just reported that he has got an increase of 2 cottahs (12 bus.) of paddy with *E. l.* and the grain is better filled and heavier, the growth of straw being the same in both cases. I expect the increase is due to the large amount of phosphoric acid in *E. l.*, as the small amount of mineral constituents in rice is largely phosphoric acid.

It is a pity, for Mr. Nelson's sake, that he could not retain patent rights on his system of manuring, else he would have had every prospect of retiring as a millionaire in the next few years!

The roots of plants.

A late report of the Kansas Agricultural Department distinguishes two classes of roots in plants, explaining the text by means of an illustration which we regret we are unable to reproduce. The two kinds of roots are (1) the feeding roots which grow along in the true or cultivated soil where the plant food is abundant, and (2) roots which go down deep into the soil in search of water.

"We say search of water as though it were a matter of instinct, but the influence which encourages these roots to take a downward direction is the flow of moisture constantly coming up by capillary attraction from below to the surface.

"The young roots are attracted by the moisture, and grow and go down deeper and deeper. There is a case recorded of a willow which grew to be a large tree in apparently a dry soil, but it was found that there was a small leak in an underground tank, several feet away and deeply below the soil; guided by the moisture which came up through the soil, the roots found it out and formed a large mass of fibrous roots in the tank itself.

"The depth to which some of these moisture-seeking roots will go down is remarkable. One day on Earl Ducie's example farm at Whitefield a party of young men thought they would ascertain how deep wheat roots went down into the subsoil, and one of them held the root in his hand to shield it while the others dug out the earth and gravel to enable them to follow its course. They dug out tons of stuff, which carried their digging down eight feet four inches, and, as they believed, the root was then broken off. Roots of onions have been found nine feet down or more, and could be distinguished by their taste. Where deep cuttings were made across a field of sainfoin for a water-works culvert, the roots of the plant were found twenty feet from the surface, and lucerne roots have been found even deeper; in fact, it is believed they go down to the bed-rock even.

"The habit of grasses, whether deep-rooting, or growing with shallow roots, determines their suitability for this country.

"Now, it is easy to see that a field with a hard and almost impenetrable subsoil, or pan, created by constant shallow ploughing, will not allow of this deep-rooting, and therefore in absence of rain for even a short time, the crops must suffer, while on other lands which have been subsoiled and the impediment of a pan broken up, the crop may

hold out and come to maturity. Besides the advantage of the deep-rooting, the feeding-roots of the plant will find food in the broken-up subsoil when they can be distributed amongst it."

Selangor.

The annual report of the Selangor Planters' Association for 1896 states that 21 new members have joined, and that the total area under cultivation is 4,487 acres, with more labourers. Extensions during 1897 bid fair to pass those of any previous year. The report continues:

"Considerable areas have been opened up in almost every district in the State; but most notably in Klang, where flat low-lying lands have attracted particular attention, where, contrary to what might have been expected, malaria and dysentery, the scourges of this country, are comparatively unknown. An unfortunate reverse was experienced by several proprietors who found large quantities of tin in the land which they had purchased; but the Government having acted with praiseworthy promptitude and liberality in allowing the owners of such land to take fresh holdings elsewhere in exchange, many took advantage of the offer and have started work in more promising localities. The 320 acre block system still finds little favour in the eyes of planters, but surveys have been put through with much greater rapidity, and the land offered at all auction sales has been amply sufficient for buyers to secure what they required without competition.

Regarding the work of the Labour Commission appointed early in 1896, the report complains that the Government has apparently shelved the whole question and proceeds:—

"A mass of evidence was adduced to show that there is a decided feeling in the highest official quarters that the Government should import their own labour from the Straits, and it was urged that emigration to the Straits should be facilitated by the establishment of depôts in a suitable district or districts of the Madras Presidency, and running a subsidised steamer service from Negapatnam to Penang; it was also recommended that a certain percentage of the Circular depriving employers at this end of the right to pay agents for recruiting free—i.e., unindentured—labourers in India should be withdrawn. The latter suggestion has been adopted and a sum of \$1,000 was provided in the Budget of the Colony for the purpose of "Assisting Immigration;" the Native States have contributed nothing at all! It can only be hoped that the Government will yet come forward in some way to relieve the strain, and that the neighbouring Colony of Ceylon, where labour has been imported in the past for Public Works of magnitude, where at the present time the go-ahead Governor, Sir Ridgeway, has declared himself most strongly in favour of the same policy, affords an example which the Government Settlements with its very insufficient supply of labour may well follow."

Jadoo, Limited.

In to-day's issue appears an advertisement from this company offering its shares to the public, which we doubt it will avail itself of the chance. The capital is Rs. £50,000, individual shares being issued at £1 each. Full particulars may be obtained from the Madras agents, Messrs. Parr and Co. To planters of course the question of price is ever

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Famine Fund. This fund has been opened as a branch of the fund started by the United Planters' Association Southern India. Subscriptions (monthly) or donations are earnestly solicited for from all residents in this district. Remittances should be sent to Hon. Secy., Nilgiri Planters' Association, Hon. Mr. H. Percival Hodgkiss, Kullakambay; Henry Wapshare, Esq., Guynd P. O.; L. W. Grey, Esq., Kara; L. C. Liebenrood, Esq., Nellacotta.

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Writer. Wanted a Writer for Field work only, must have a thorough knowledge of coffee, keep a rough roll, and have a good labour connection. None need apply unless they have the latter. Apply A. MORGAN, Kil Kotagiri, Nilgiris.

English Graduate. An English graduate and the son of a General Officer desires an engagement. Address
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Five. C/o of this Journal.

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C/o Manager, P. O.

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Apply E. P. L.,
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from what we have gathered, we believe the local manufacture of this material would result in an enormous saving in cost. The bulk of this manure is fibre, so that the cost of freight would only bear on the actual chemicals used to impregnate the mass. We have no wish to "boom" a patent manure, but in support of a correspondent's opinion on the subject, the following letter from a well-known Ceylon planter will be of interest. It shows how Col. Thompson arrives at his new estimate of one ton being sufficient for 3,600 plants, instead of 300 plants, as proved "Toda" on the original prospectus.

We may point out that the success that has hitherto attended trials of this fibre in all parts of the world has been phenomenal, so that whether planters find it profitable or not to make large use of it, will not appreciably affect the future of the investment in the shares of the Company.

Extract from Report on Experiments made with Jadoo, by
 M^r. GEORGE H. GREEN, of Callendar Estate, Ohiya, Ceylon.
 20th October, 1896.

I have completed my experiments with the Jadoo Fibre and Liquid. In regards tea nurseries, I put some into old nurseries which had been replenished with good black jungle soil, with the exception of a piece containing the Fibre. I found there was not much difference in the growth of the plants, any slight difference being in favour of the Fibre.

My second experiment was in *very bad* soil, utterly unsuitable for tea nurseries in its present state; but the Fibre brought the seedlings on nicely, and they looked healthier and stronger than if I had sown the seed in ordinarily good soil.

My third experiment was with vegetable seeds, and it was here I had the most marked success. I grow vegetables from seed regularly, but I have never seen the seedlings shoot up so strongly and healthily as they did in the Fibre. They germinated also very much better. In the Liquid, I had not sufficient to experiment on the tea nurseries, but I found it useful and beneficial in watering the vegetable seedlings which had been transplanted from the Fibre, and I did not notice that grub attacked the young plants like they usually do.

From my observations, I consider that to be of real use in tea nurseries, the Fibre must be put three or four inches deep, because the plant has a long tap root, and though the feeder roots are at the surface, they continue down the length of the tap root for a little way, and so it is natural that the young plant does not get the full benefit of the Fibre unless it is laid rather deeply. I also think that it would be of the *greatest service* in "supplying" tea plants in vacancies caused by deaths, either to place the Fibre in the hole immediately before planting the new plant; or if baskets are used, to fill half the basket with the Fibre instead of with earth.

For market gardening, I think it should be of the very greatest benefit, and, indeed, for every householder who grows his own vegetables.

Trenching in poor soil. A planter draws attention to the great mischief caused to plantations with poor shallow soils by some systems of trenching. "I have never quite understood the *raison d'être* of trenching in thin poor soils; with red laterite scarcely half a foot below the surface. Is it to prevent the rain washing away what surface soil there is? Then why not confine that operation during the rains only. No, it is said, you must keep the trenches open to 'aerate the soil.' What a term to conjure with this, the 'aeration of the soil'! What injury is not done in its name, what expensive fads and ludicrous experiments have not been aired and tried in its support. But this is a digression. The aeration of the soil is undoubtedly an excellent thing to strive for, and nowhere more so than in poor shallow soils. But does the usual, or shall I say, a common form of trenching, answer the purpose? The trenches are opened and blocked every few feet by a strip of undug soil, catching water and preventing

drainage as well as wash. The bottoms of the trenches are not forked, which would help the water to drain in the subsoil. Lastly, and most fatal of all, the earth from the trenches—the raw, sour subsoil—is spread over the surface soil between them. Short of no cultivation at all, I cannot conceive of any better means both to stop aeration and deaden, *i.e.*, render inert, what fertility there may originally have been. To take the points one by one, and as briefly as may be. The blocking of the trenches, and non-forking of the soil, results in so many long pits to *hold water*. Where water does not freely penetrate, there can be no aeration. I said it prevented wash. It does. But it is worse than wash if anything. The soil from the trenches is thrown out below them, effecting precisely the same thing as wash, *i.e.*, a transference of soil from its original position to one lower down the slope of the hill. The main object, as I have already stated, of trenching is to prevent loss of surface soil. Yet the covering up of the surface soil by the raw trench soil completely neutralizes this. As everyone knows, who knows anything at all about scientific agriculture, fertile soil is literally living soil, *i.e.*, soil full of living organisms. This life can only endure under certain conditions, one of which is air. Now raw subsoil in South India is synonymous with iron soil in its crudest and most harmful condition. One of its baneful effects is an inordinate greed for oxygen. Consequently, until the layer of subsoil has had its wants in this respect satisfied, the *once living surface soil remains dead*. And how the feeding roots of either coffee or tea can be supposed to thrive in dead soil surpasses my humble comprehension. There are three obvious ways of remedying the above defects in this style of trenching. First, let the trenches be *unbroken* throughout their entire lengths, for if they are dug between every row or every other row of trees there can be no wash. Secondly, let the soil be thrown above the trenches, this will ensure it being spread for only a short distance and save the otherwise inevitable barking and hacking of surface roots in the process of covering. Thirdly let the bottoms of the trenches be *forked* at least half a fork deep. To sum up, the faulty style of trenching to which I have alluded, is nothing more than fallowing the land, in other words, a cessation of crop for the time being. If planters can afford this, well and good. At present I believe there are few who can. I know my readers will excuse my dogmatic style, as it is the essence of planting controversy to be downright, if not pigheaded."

SCIENCE AND SOILS.

II.

(Continued from our last.)

Moisture holding powers.

Upon the prevention of surface wash by deepening the surface soil, although there is some difference of view, the weight of opinion agrees that "deeper plowing saves the top soil." The practical opinions agree, with one exception, that "constant cropping" and movement of the soil injures the mechanical state, and "lessens the power of the soil to hold moisture." We have already shown that soils which receive a small rainfall have less power to hold water, specially on account of their less content of organic matter. We are persuaded, however, that much of the "loss of mechanical state," the tendency to pack which follows *constant cropping* is due to the need of lime in some form, the form of application depending on conditions. We have seen close, heavy, packed land on Kauai utterly changed by use of coral sand, and the crop increased by one-third. Some soils complained of to us as being in bad working condition,

we have found to contain more than 0.5 per cent. nitrogen, which means an excess of organic matter, but they were nearly destitute of lime. One physical action of lime in the soil is to gather the minute soil particles into clusters or "aggregates," and thus prevent them packing together. Virgin soil, even poor in lime, is friable and works easily. The grass roots, like trash, prevent packing while they last, but with cropping the large particles of vegetable matter disappear. Lime is of imperative value for mechanical as well as chemical reasons.

Then follows an interesting note on the value or otherwise of adding humus to the soil. It is pointed out that in districts where there is excessive rainfall, resulting in great quantities of vegetable matter, the addition of humus is positively harmful, inasmuch as it intensifies the sourness of the soil.

Nitrogen. In the soil report of last year it is stated, and supported by data, that the high lands, notwithstanding their high content of nitrogen, are notably less productive than the lower lands, and become rapidly non-fertile. That observation, confirmed by other observations, and by actual tests, led us, even in view of the large nitrogen content of our soils, to say that "the crying want is nitrogen," and that "50 pounds of nitrogen given to the soil in an available form is of more moment to the growing crop than the 17,000 pounds of organic nitrogen lying inert in each acre of land." These were strong, possibly bold statements, and required to be tested by trials and results. So far as analyses were available of fertilizers that had been used upon these islands, it was found that the composition ran in general about as follows: 15 per cent. phosphoric acid; 5 per cent. to 12 per cent. of potash; and from 2 per cent. to 3 per cent. of nitrogen. If our view was correct concerning the predominant want of our soils, and the particular need of the cane crop, it was clear that fertilizers of the composition stated did not meet those needs, and there was little economy in their use.

The formula most generally advised by our Bureau for the preparation of fertilizers requires: 8 per cent. phosphoric acid, soluble in water, 6 per cent. nitrogen, and variable proportions of potash as suggested by individual soils. The forms in which the nitrogen and potash are being used will be discussed in another place.

We, personally, after noting the action of given fertilizers in the field, and upon a scale covering areas upon all the islands, find our statements of last year amply confirmed.

Value of Sulphate of Ammonia. In our report on fertilization last year the conditions were discussed which control the form in which nitrogen is most advisedly applied in definite locations. Examples were given stating situations where it is strictly inadvisable to use nitrogen as nitrate of soda, and other examples where that very soluble salt was the saving and making of the crop. Further we stated our belief "that nitrogen in sulphate of ammonia has a higher value per pound than nitrogen in any other form for the cane on these islands." We maintain that statement now, in the sense that sulphate of ammonia is a form of nitrogen most unquestionably best adapted for covering the greatest diversity of conditions. Its solubility in water gives it a large measure of the active property of the nitrate, while its behaviour in relation to the soil is a protection against waste by leaching in moderate climatic conditions, analogous to the properties of organic nitrogen fertilizers. The testimonies that we have recorded from numerous plantation managers concur in giving to sulphate of ammonia a very high value, which they also accord to nitrate of soda in very dry situations. We must bear in mind, however, that ammonia sulphate has just recently come into use with us, and we have had difficulty in securing its use by reason of the greater price of the nitrogen per pound. Notwithstanding our personal belief in sulphate of ammonia as a nitrogen compound having the maximum value for general use, the further study of our soils, and of the climatic conditions which control their mechanical state and physical properties, cause us to believe that proportions of soluble or crystalline nitrogen and of less soluble, organic nitrogen, added together, may have a value not yet set forth. In our report on soils it is shown that our makai lands are generally poor in organic matter, and as a result of this poverty these lands have a small capacity to absorb and retain moisture. The crystalline salts of nitrogen exercise no permanent action upon the physical properties, unless it should finally be proved that nitrate of soda does operate inimically in this respect.

Animal nitrogen. Organic nitrogen fertilizers contain organic matter in addition to the nitrous constituents, and this organic matter, not only can aid in ing moisture before the fertilizer becomes decomposed; certainly its decomposition products can furnish permanent additions of organic matter to the soil. If humus is one form of these "permanent additions," we have then to admit that some portion of the organic nitrogen has not been used by the cane for there is no formation of humus without nitrogen. In our report on fertilization last year we gave reasons for stating that probably a small portion of the nitrogen of all organic fertilizers is permanently added to the stock of organic matter in the soil. Therefore, for our low lands, of smallest rainfall, we are advising, very generally, that the nitrogen shall be supplied in the several forms of nitrate, sulphate of ammonia, and of fish scrap or dried blood, strictly requiring that the fish scrap shall be free from excess of fats. In special situations and for special results, nitrate of soda or sulphate of ammonia are advised alone. Organic nitrogen alone on our low lands, with meagre water supply, causes a loss by reason of its slow action. A notable example of this was observed at Spreckelsville. Fish scrap was added to a portion of a field of cane, and is now working well. It, however, was several weeks before any activity was seen, and that slowness to act lost the cane one month of growth in the most active part of the growing season, in the comparison with the result of sulphate of ammonia. A little nitrate upon another part of the field, where the cane, after ten days, felt the action of the nitrate, and the ammonia sulphate maintained the growth up to the present time.

Excess of humus. On our mauka lands, whose soils are frequently in a very granular and porous state, and where the rainfall is very notably greater than on the low lands, we have to be guided by other considerations than those expressed in relation to the makai lands. The high lands are full of organic matter and of organic nitrogen; therefore organic fertilizers are not needed for physical reasons. The open state of some of the upland soils, and the greater rainfall, place nitrate of soda out of question; and examples are known where sulphate of ammonia disappeared too rapidly. For these lands sulphate of ammonia is advised to start the growth, but the bulk of the nitrogen is most safely applied as fish scrap or dried blood. In extremely wet situations, sulphate of ammonia has recorded some examples of excellent results. On the other hand, when the application was suddenly followed by a deluging rain, no results were seen, and these examples cause us to advise that the sulphate of ammonia shall be supplemented by organic nitrogen. Under such rains as we witnessed in Hillsboro, newly-applied fertilizer of any kind can escape waste. As already remarked, the form in which nitrogen shall be supplied is largely controlled by the soil and the climatic conditions.

(To be continued.)

LAND ON THE ANAMALAIS.

THE following proceedings issued by Government have reference to a Memorial received from Messrs. Edmiston, Windle, Rhoads, James, Allan, Brodie and Narasiah on the subject of the grant of lands on the Anamalais:—

The memorialists object to (1) the auction system which has been decided upon by Government, (2) the allotment of only 1,000 acres to each of the original applicants, (3) to the terms laid down ensuring the land being opened up within a certain period, (4) to the rule regarding relinquishments. They ask (5) that no assessments shall be collected until the road is completed, (6) that houses may be granted on special terms, (7) that the charge on grass land may be reduced, (8) that when land is resumed by Government, purchase money may be refunded, and (9) that the time for selection by original applicants may be extended till the 31st March, 1900. The Collector of Coimbatore in dealing with the Memorial states that objections 3, 6, 7 and 9 have already been dealt in a letter dated 2nd October, 1896, on Cur. No. 280 (vide Board's Proceedings, F. 494, dated 23rd October, 1896). The first objection is to an essential part of the policy of Government and he did not consider the terms should now be altered. It was not, he thought, at all certain, that there would be much competition for the land, and if there was it would only show that the privilege now asked was a very valuable one. The second objection was to some extent reasonable. It was a fact within his personal knowledge that Mr. Edmiston's large application was made for a syndicate of nine or ten gentlemen.

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ers, Binny and Co. and persons connected with the firm put in less than nine applications, and were entitled to 6,000 acres, whereas Mr. Edmiston's syndicate could only obtain 1,000 acres. Other applicants were similarly circumstanced, and it might perhaps be advisable to allow single blocks of 2,000 or 3,000 acres to be taken without auction by the original applicants, but not to allow them to split up the amount of the land allowed to them. If it could only be shown, the Collector says, that the rule regarding relinquishments worked hardship in any particular case special consideration might be given to that case. The fifth request was unreasonable because there were many planters who paid assessment, and had bought estates many miles from the cart roads. The eighth request, however, was reasonable.

The Board of Revenue in forwarding the Memorial to the Government concurred in the Collector's remarks.

The following is the Government Order on the Memorial:—

G. O., No. 694, Revenue, dated 4th December, 1896, the Government has already sanctioned the refund of the purchase money and that are resumed and the extension of the time of selection to the 31st of March. The question whether partial relinquishments should be permitted and the objections now raised by the memorialists to the terms laid down for ensuring the opening up of land were considered at the same time, and it was decided that an enhanced rate of assessment—Rs. 2 per acre—should not be imposed on more than 50 per cent. of each holding unless a larger portion were actually cleared but that no further concession was made for. The Government is not prepared to reconsider the orders directing that the lands shall ordinarily be sold by auction and giving the maximum area for selection or for auction purchase at 60 acres, and cannot entertain the request that no assessment should be levied until the main road is completed. As regards the memorialists' request that house-sites and grass lands may be granted on favourable terms, the Government observes that a similar concession was raised in paragraph 16 of the Collector's letter, dated 10th October, 1896, printed in G. O., No. 694, Revenue, dated 4th December, 1896. The Board of Revenue then held it premature to consider what should be done with regard to the grass lands, which were remarked were trifling in extent, and instructed the Collector to refer for special orders applications for house-sites which might be received. The Government has since further considered the question and is not prepared to issue any orders enabling applicants directly to extend the area obtainable on favourable terms, which should ordinarily include the land required for building purposes.

The following order has reference to an application by Mr. E. G. Windle for a grant of land of 25 acres for cooly lines, etc.

A large open space, several hundred acres in extent, consisting of grass land and rock was included within the limits of the original application of Mr. E. G. Windle, of Kotagiri, for land on the Malais. On the 2nd November he applied for this land and to be allowed to take it up on special terms, in addition to an application for 1,000 acres of forest land which he proposed to put in. The Collector was unable to support his application as he considered that the open area should be retained for public purposes for the following reasons:—

There are a number of Khaders living there and they should be allowed to move about on this land.

The main road will probably pass through it.

A forest rest-house will probably be built on it.

A large rain-gauge will probably be set upon it.

It is a suitable halting place and camping ground.

It would be made use of in this manner by coolies and pack-
lock drivers and by planters and others passing through.

It would be required for assigning small plots to planters for temporary use for the construction of sheds for coolies, for storing
&c.

Mr. Windle then asked for 25 acres of this land at its eastern end, for building cooly lines, and the Collector seeing no objection to this, requested to know on what terms this and similar applications could be disposed of. He recommended that there should be a maximum of, say, 20 acres for land like this which is wanted for a particular purpose, and that it be granted without auction at a yearly annual rental of As. 8 per acre, with liberty to the occupier to relinquish at any time.

The Board of Revenue approved the Collector's proposals, it being understood that grants of the land could only be made to holders of the best land under the rules sanctioned by Government for the Malais.

The following is the order of Government on the subject:—His Excellency the Governor in Council considers that the effect of the grant of the concession recommended by the Collector is the indirect extension of the maximum area fixed by Government in the case of each applicant and that a new set of rules would have to be framed in order to provide for the grant of extra land at a low rental and subject to relinquishment at any time. This, in the opinion of His Excellency in Council, is inadvisable and the Board will therefore be requested to withdraw its approval of the Collector's proposal.—
Madras Mail.

FAMINE FUND.

CENTRAL TRAVANCORE PLANTERS'

ASSOCIATION, PEERMAAD;

via PERIACOLAM, 13th March 1897.

TO THE EDITOR,

"Planting Opinion," Madras.

DEAR SIR,—Will you kindly oblige me, by printing in your next issue, the accompanying list of subscriptions from this Association to the Famine Fund?

Thanking you in anticipation,

I am,

Yours faithfully,

(Sd.) GRANVILLE L. ACWORTH,

Honorary Secretary.

DONATIONS TO FAMINE FUND FROM CENTRAL TRAVANCORE PLANTERS' ASSOCIATION.

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Total Rs. 510

THE COCCIDÆ OF CEYLON.

PART I.

THE following review of Mr. Green's book is taken from the *Ceylon Observer*:—

Belonging to a family of entomologists, Mr. Ernest E. Green has pursued his scientific researches for many years, and in finally deciding to deal exhaustively with that species of scale insects known as Coccidæ, he has engaged in work which will cause the practical representatives of several great agricultural industries to be deeply indebted to him, and which at the same time will enrich the field of scientific knowledge. As he explains in the opening words of the preface:—

The present work has been written with a two-fold object. Firstly, to give a scientific and formal description of this little-studied but important group of insects; and secondly, to enable planters and agriculturists in general to recognise these destructive pests, to understand their habits, and to learn how best to deal with them.

How thoroughly Mr. Green has pursued his studies and enquiries

may be gauged by the statement that in 1891, when Mr. W. F. Kirby published his "Catalogue of the described Hemiptera, Heteroptera and Homoptera of Ceylon," only seven species had been recorded. Mr. Green in November, 1894, drew up a preliminary catalogue in which he enumerated 72 distinct species that he had then found in Ceylon. This large number will practically be doubled in the present work—for Mr. Green has nearly reached that number, and since his recent return to Ceylon he has added three or four new species to the list. The author himself observes that when other parts of the island have been properly explored, it is probable that considerably over 200 species will be recognised. To secure uniformity of terms, every species, whether new or not, has been fully described according to a uniform plan, while the figures (unless otherwise stated) have been drawn from and refer to Ceylon specimens only. Some of them may possibly differ slightly from typical examples, in such minor points as size and colour, but this much enhances the utility of the volume from the Ceylon point of view.

On each of the 33 plates issued with Part I—and which, we think, notwithstanding their being of smaller size than the letter-press pages, should still be inserted where intended in the text—will be found one figure representing the insect of natural size, in its natural position on the food plant. The other figures on each page have been enlarged to such a degree as to conveniently show the requisite detail. We have already described the exquisite finish of these plates; and, whether from the point of view of outline, shading, colour, or number of illustrations on each plate, they leave nothing to be desired in the pictorial department. The actual measurements of each species are given in the descriptive letter-press in millimetres, as the metric system is being universally adopted for scientific purposes; but even in this matter the author has not forgotten to assist the uninitiated, and includes a scale of the two systems, so that those more conversant with the English standard of inches may find their comparisons facilitated.

Besides naming and thanking leading authorities in England, America, Bohemia, New South Wales, New Zealand, and the Cape for valuable aid given to him, Mr. Green says:—

Most of the species described in the present work were collected by myself, chiefly in the neighbourhood of Punduloya at an altitude varying between 3,000 and 4,000 feet. Some particularly interesting species were discovered and sent to me by that most industrious entomologist, Mr. John Pole, from Hambantota, Tangalle, and Chilaw. Mr. W. D. Holland, of Balangoda, has also very kindly sent me specimens from that district.

The coccidæ—like other insect life—can breed all the year round in a land of perpetual summer like Ceylon, and when imported have always speedily increased. They are, happily, kept in check by both vegetable and animal enemies, and are particularly susceptible to destruction towards the close of the rainy seasons. In the introductory chapter—as distinct from the preface—the author mentions some of our worst enemies among the coccids, such as green bug, black and brown ditto, "greedy scale"—which has somewhat recently found its way here, and is responsible for many weakly tea plants—red-spider, mealy-bug, scale, &c. The common guava tree is a fruitful centre of infection, and ornamental plants and coffee and tea bushes when sheltered are much more subject to attack than exposed ones. Of remedies, Mr. Green mentions the lady-bird beetle, the larva of the "lace-wing" fly, the larva of a small blackish butterfly, &c., as external feeders, besides a number of parasites, or internal feeders.

The second chapter of the book deals with the collection and preparation of specimens, which should prove of much value to those wishing to commence a study of the coccidæ group of insects. In the next chapter the subject of characters and classification is dealt with, after which the writer takes up the sub-families and treats of each genus in truly scientific detail and language. Here the extensive glossary provided will be found invaluable; and with his studies thus aided the interested reader may well be encouraged to possess Mr. Green's publication and master its contents.

The economic side of the question—insecticides and preventive measures—is to be taken up in Part II, and will be attached to it as an appendix; and we hope to see this second section of the work ready before the middle of the year. Above all, we trust that there will be many orders for the publication from estate owners and estate companies besides other public bodies and private individuals, and that Mr. Green will find his labour of love no actual pecuniary loss. This our community can assure for the author, though it must

continue ever indebted to him as a general benefactor by reason of the public-spirited collation of his long years of investigation and discovery.

RHEA-CULTIVATION IN KANGRA.

[Being extracts from a report to the Government of India by James Montgomery, Esq., Kangra.]

Propagation.

(1) By seed: This course must be adopted in some cases when the germ of the plants has to be carried over great distances; but probably much disappointment will attend the result. To obtain the seed great care is requisite, and a favourable atmospheric season. For this purpose young spring seed should be carefully reserved in a well sheltered position. These plants should receive special care and be well manured. During the rainy season they must be kept thoroughly drained and after that has passed, the ground should be carefully loosened round the plants. If the rains cease early in October a fair amount of seed may be obtained; but, as far as I judge, no amount of care can ensure success, so much depends on the season, a dry one being most favourable for the full development of the seed. The only method of solving, which I found successful, was on a gentle hot-bed under glass, in March and April; the seed scattered over the surface, covered very thickly with sifted earth, and carefully shaded from the sun, until the plants were about three inches high, when sunlight should be gradually admitted. When sufficiently strong they should be planted out a foot apart every way.

(2) By cuttings of the stems: The stems should be selected from grown ones, allowed to ripen well and not cut until duly ripened. Then divide the ripened portion of the stem where the leaves have turned fully brown into short lengths, each including one eye or bud, cut a quarter of an inch below the bottom bud and as much above the top one, and plant with the centre bud downwards with the surface. If the weather be damp and cloudy, the cuttings readily strike root, otherwise they will require shading for a week or ten-days, the soil being kept moist. As with seed, I find a foot apart every way the most advantageous distance, very few shoots are thrown up the first year.

(3) By divisions of the roots: This is by far the most advantageous and profitable method. The plants for this purpose should be three or four years old. After gathering the crop, dig out each plant carefully and remove the earth from the roots. I generally put the mass of roots into running water for a short time; this cleanses them thoroughly and enables the gardener to see his work clearly. The tuberous portions of the roots will be found to show a large number of eyes similar to those on a potato. From these carefully separate portions containing five or six eyes; let the cuts be clean and reject all fibrous and decayed matter. Expose these sets to the sun for a couple of hours to dry the surface of the wounds, and then plant six inches deep, and at the full distance of four feet apart every way. In this way two good crops will be obtained from the first year.

The soil and situation for plantations.—A rich loam suits the plants best, but they will grow in any kind of soil, provided a full supply of moisture be available, combined with the drainage. The latter is emergently required, particularly in the rainy season, as should the land be retentive and be swampy the plants will decay in a very short period. If the land be poor, a liberal supply of manure is requisite, otherwise the stems will be short and weak, yielding scarcely any fibre. In no part of Upper India can the plant be successfully cultivated unless water for irrigation be available during the rainy season. The facilities for obtaining an ample supply of water, combined with moderate temperature at all seasons, render the district particularly favourable to the plant.

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Touching a shipment of Indigenous Tea seed, an experienced Indian Planter writes us from Madura District dating 24th June 1896: "Just received the Tea seed; it has arrived in perfect condition, notwithstanding unnecessary delay in transit, and does you credit. Please book me for five maunds as early next May as possible."

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Via Colombo, Heneratgoda, Ceylon.

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TROPICAL SEED MERCHANTS,
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Full Prospectus, with Testimonials from all parts of the World, on application to PARRY & Co., Madras.

Cultivation—Should the land have been stocked with seedlings or cuttings (paragraphs 4 and 5), then in the following ring, after having reaped the first crop of available shoots, every other plant should be transferred to fresh ground, and put down three feet apart. The following year the same course should be pursued, taking up each alternate root and replanting at four feet apart. After this the plants may well remain undisturbed for four years, hoeing well between after each crop, clearing the weeds, irrigating moderately during the dry season, and supplying manure where necessary. The only manure I had at my command has been vegetable, consisting mainly of the leaves and good portion of the plant itself, and of tree and vegetable leaves stored up for the purpose, with which I mix a considerable amount of wood-ashes. With the aid of this only I have kept plants growing in the same spot for upwards of six years; but consequent on the then very crowded state of the ground, the stems were short and very weak. I would therefore recommend thorough removal after four years, the land to be then well trenched, cleaned and manured.

Gathering the Crop.—The period of reaping will vary slightly according to difference of season. I find that in this district three good crops can be relied on each year;—the first during the latter half of April, the second about the commencement of August; and the third about the end of November. It will be found of much advantage to postpone reaping the second and particularly the third, as long as the condition of the plants will admit. If the third crop be cut in the middle of November, the weather here during the remainder of that month is not sufficiently cold to keep back the new growth; and should the young shoots appear above ground early in January, the forests which are usual at that period seriously injure them and lessen the spring crop. My own experience indicate that the stems should be gathered so soon as the cuticle shows a clear brown colour for about one-third of the length. At this stage, if the soil be good and the plant healthy, the stems will be clean from butt to point, the leaves of a rich dark green above, and pearly white below, and the branch-buds, at the axil of each leaf-stalk just showing. If gathered earlier than this I find the connection of the fibres very weak, and that a considerable portion separates in the operation of scraping the peel. If allowed a further growth, the axillary branches will have been thrown out, which will cause breakages at every point both in peeling and cleaning.

The average height of stems grown here has been six feet, after cutting off the soft portion at the top. In gathering I supply each coolie with a sharp pruning knife. With this they cut the ripe stems close to the butt; these are removed in bundles by boys to the nearest manure pit. Here the boys cut off nine inches of the top and pass one hand with a gentle pressure from top to butt; this removes every leaf. The stems are then placed in clean water from whence the peelers remove them and separate the peel, which is again thrown into water, from which it is withdrawn as wanted by the men who clean it. Then lay three or four strips of peel on a flat board, scrape it a few times on the inner side from butt to point, then turn it over and repeat the scraping, which removes the cuticle: it is then hung up or thrown on clean grass to dry.

Taking the distance of four feet apart for fully bearing plants, an acre will contain (allowing for paths and water channels) 3,000 plants: more than this I find to be too crowded and to increase labour while lessening the actual yield during a four years' period. Thus planted the yield will be a steadily increasing one, and the plants will not show any deterioration.

From repeated experimental weighings, I have deduced the following average proceeds from 1,000 freshly cut 6 feet stems:—

Weights as cut		lb.
Do.	When dried	286
Do.	Fresh peel	77.5 = 27 p.c.
Do.	Dry peel	83 = 29 "
Do.	Fresh wood	21.5 = 7.5 "
Do.	Dry wood	203 = 71 "
Do.	Clean dry fibre	56 = 19.5 "
Do.	Water	18.7 = 6.5 "
		208.5 = 73 "

If larger stems, from 7 to 8 feet, be taken, the average is less in the weight of peel, but in the outturn of clean fibre it is slightly greater. With small stems from three to four feet, the percentage of peel is markedly greater, but the return of fibre is barely 35 per cent. Moreover, the extra labour in cutting, peeling, and cleaning these small stems is an important consideration.

The crop cut during the rainy season will always contain a large percentage of water, and that of clean fibre be found rather less, the fibre being also softer than at the other periods of cutting. This I consider due to the fact that at this period the resinous matter in the plant is in a more diluted state, and consequently a greater portion of it is removed during the process of washing and scraping the peel.

I have already expressed my opinion against the use of either immature or small stems as likely to give a result inferior both in quality and quantity: yet I am fully satisfied as to the advisability of not only sorting the crop, as cut, according to length of stem when necessary, but I would further recommend that the peel from all stems of five feet and upwards should be divided into two, and the fibre from the upper and lower portions kept distinct. If cultivated as I suggest, the difference in length of the stems at each cutting will be found very small, the monsoon crop always giving the longest stems.

Taking the above as a basis for calculation and knowing that each plant established as I recommended will give at least an average of six stems during the first year, I assume:

$$\frac{3,000 \text{ plants} \times 6 \text{ stems} \times 3 \text{ crops} \times 18 \text{ lb.}}{1,000} = 972 \text{ lb.}$$

per acre per annum

In earlier estimates, calculating on closely-planted crops and stems four to five feet, I was cautious to restrict my estimate to 750 lb. per acre, but five years' additional experience has shown me that with proper open cultivation 1,000 lb. per acre may be fairly assured

LETTERS TO THE EDITOR.

ANSWERS TO CORRESPONDENTS.

[M. E. D. REARDON. Your recent "discovery" of the two great enemies of coffee, viz., leaf-disease and borer, is a great one, and you do well to acquaint us therewith. It seems almost a pity to have to state that S. Indian planters have a long and painful acquaintance with both. Perhaps your "cure" will be a few years more up to date?

"BET." Very sorry allusion in a letter in last issue crept in. Your address has been mislaid, or we would write you direct.

"MYSORE KOLA NUT." We expect the seed must have dried before reaching you. Some of the same lot germinated at Burliar (Nilgiris) a week or two after sowing.—ED.]

KOLA NUT.

SIR,—You have had a good deal to say re the above in the

HYDROCELE & ASTHMA. Instant relief! Permanent cure guaranteed or the Price (Rs. 5) refunded. Don't despair, even if in the last stages. Apply to—MANAGER, V. C. WORKS, Ranaghat, Bengal.

P. O. lately; but can you tell me whether *anyone* in S. India has a four-year old tree and does it show any signs of bearing? I do not think there will be any difficulty about growing it, but will it produce fruit?

It would be rather serious to put out thousands and then find it will not crop. I understand it wants the same treatment as 'Cocoa,' and as that product *will not* grow on the Nilgiris, the question is will 'Kola'? Information will oblige.

ANON.

[The question is essentially one for experiment. We understand that Kola will thrive under the same conditions as Liberian, though it does best on cocoa land, *i.e.*, river sides and flats. We believe that there are no trees four years' old in this or any other district in India or Ceylon.—ED.]

JADOO FOR SUPPLIES.

SIR,—In one of your last issues you published a long letter from "Toda" on Jadoo, and remarked that it was a "crushing rejoinder" to certain criticisms on his former letter. Perhaps your correspondent will kindly exercise his pulverizing powers on the following statement of Colonel Thompson's to the Editor of the *Indian Planters' Gazette*. Colonel Thompson states that a planting basket half-filled with Jadoo is quite sufficient to bring on the young plant. He reckons that a ton in this way would be sufficient for 3,640 baskets.

"Toda" holds that the price per ton on the estate comes to Rs. 170. The prospectus states or stated $3\frac{3}{4}$ peck were required for each supply plant, the price running out to 9 annas each. A ton is thus sufficient for 300 plants.

But if you accept Colonel Thompson's later statement, which seems on the face of it very reasonable, that half a planting basket is sufficient, a ton will serve 3,640 plants. Therefore, taking "Toda's" price of Rs. 170, *each plant will only cost a little over 9 PIES each.* Wherefore I say

TRY JADOO.

BAT GUANO.

DEAR SIR,—I enclose cutting from the *Produce World* of the 5th of February re "Bat Guano." This reads as if it would be most suitable for coffee, and I should be obliged if you or any of your readers could give me any particulars as to whom to apply to in India, etc.

GOOBOOR ESTATE,
KOPPA, March 11th, 1897. }

Yours faithfully,
WALSHAM H. MAYNARD.

Bat Guano from New Caledonia will, in our opinion, edge itself pretty effectually into public favour, if anything comes of the proposed syndicate which is now said to be in course of formation. For some reason or other—conservatism doubtless—people in Caledonia who have hitherto approached London traders have received only scant encouragement, and the trade has been stifled to a degree that is almost beyond comprehension. Samples of this guano have been put before us, which have varied considerably in quality, some containing 2 per cent., and others as much as 8 per cent., of ammonia, while the percentage of phosphates were found to vary from fifteen to twenty. A fair average quality should contain 5 per cent. ammonia and 16 per cent. phosphates, and would then, we should say, be saleable in the London market at £5 to £5 5s. per ton. Those of our readers who have kept a jealous eye on this business will certainly do no harm in embarking in the trade on a moderate scale, and up to the end of April the rates as quoted above can, we should say, be relied upon. As we get into the summer, it is possible that rates will ease off slightly.

TRANSPORT OF TEA LEAF.

SIR,—Can any of your readers tell me the best way to transport green tea leaf by coolie or by cart for a distance (in time) of some three hours for former and four hours for latter?

I have an idea that an arrangement of basket trays would be best for the carriage of the leaf when partially withered, so as to let it get heated on the way: the fresher the leaf and the more moisture it contains, the easier it will heat, which course is a thing to be avoided.

A friend, whose advice I asked on the matter, said that he found the best way was to let each picker bring over his own kanak of say twenty pounds or so, and gave some further details which he might perhaps reproduce with advantage here. I have a great respect for my friend's judgment, but would like to know if there is any other mode than the one he proposes as it is impracticable in my case. I remember some years ago seeing a great deal of writing in the Calcutta papers about this very matter, one man advocating withering the leaf and pressing it down tight in boxes by means of heavy weights, nailing the lid, and so to the factory.

Any information on this point would greatly oblige your enquirer.

TEA LEAF.

MYSORE MUGGERS.

DEAR SIR,—When out teal shooting a few weeks ago with a couple of Griffs, I told them that at one time a "mugger" inhabited a certain tank in the neighbourhood, but had been shot by a native, and that I had seen and measured the reptile.

Griffs appeared sceptical, and asked how the mugger had got there. I said it had probably travelled overland from the river some 3 miles away.

Still more scepticism, and one Embryo Shikar told me I had better write my experiences of "perambulating muggers" in your valuable paper.

Have you or any of your readers ever heard of muggers (Indian Crocodile) travelling overland from one piece of water permanently bred in, and inhabited by them—to another—search of food? I often have, and so have many others. Poor Morgan is not above ground to reply to this. What has become of your Shikar Editor, and that chap who used to write shikar* stories for you?

"LONG BOW."

MYSORE PROVINCE.

*Your qualitative expression, which we have omitted, is unparliamentary. Would not the word "glowing" express your meaning sufficiently? In reply to your kind enquiries after our Shikar Editor, we are happy to say he is flourishing, but is too busy converting his jungles into plantations to find time to write about the denizens of the former.

THE ADDRESS AND THE TRUST FUND.

SIR,—I was greatly surprised some time ago to hear that a proposal had been made to give a donation to the Indian Famine Fund from the funds of the U. P. A. S. India, and have just read Mr. Granville L. Acworth's letter in your issue of the 6th instant, in which he proposes to present an address and casket to Her Majesty the Queen-Empress and that the expenses be paid from the Reserve Fund of the U. P. Association. Now while all will agree with his proposal to present an address, &c., many like myself will object most strongly to the funds of the Association being used for anything but the purpose for which it was understood the Association was formed, *viz.*, to advance the interests of the planting industry in S. India. I am sorry to see, Sir, that you countenance the proposal to use the Association Funds on the plea that it would be a good advertisement. I am quite sure the majority of Planters do not wish to make use of the occasion as a medium for advertisement, but would be only too delighted to show their loyalty and since

ration for Her Majesty in the way proposed without touching funds of the U. P. Association. Many Planters who would be willing to subscribe for this purpose, will think a good before putting their hands in their pockets to replace money taken from the Reserve Fund.

While on the subject I should like to ask if the U. P. Association of S. India has any legal standing? Has it been registered under an Act and has it Articles of Association to show purposes for which it exists and to which the funds may be applied?

KADUR, }
Murch, 1897. }

MYSORE PLANTER.

"IMPROVED COFFEE SEED."

RE,—I am afraid your correspondent "Bet," in your issue of March, has not read his *P. O.*'s very carefully or he would ask the question he does at the end of 1st para. of his letter! If he will refer to *P. O.*'s Nos. 2 and 3, pages 70 and 104, I think he will get all the information he wants. Mr. Hooper, Chemist of some standing and Botanist of no mean order, (old Medalist I believe,) writes very clearly on the subject.

It is not for me to "crack up" my own pullet, but I will say this much, that until I began to plant out "*my seed*" plant, "*vacancies*" I had little or no success from so-called "*improved coffee*" that I used to buy year after year. The plants grew very well in the nursery, but no sooner were they out in the field, than they began to sicken and die; whereas for the last three or three years I have been most successful, *e.g.*, my June—July supplies of 1894 being five to six feet high and sturdy, healthy, etc., and a very small percentage of failures among them. My coffee elevation 3,000 feet, rainfall 39 inches, cultivation under shade, manure *cattle only*.

I shall be glad to give "Bet" any further information he may require if he will write me direct.

The difficulty now is to get the several kinds of "coffee seed" that have been sent to me analysed, for now that Mr. Hooper has left the Hills, the one or two who do a little in the analysing have stuck on their charges, and it seems to me that the P. A. S. I. might well turn their attention to an "analytical chemist" of their own. Why not start a "Chemist Fund"? It seems to be the day for "Funds"!!

L. W. GREY.

YKARA, NILGIRIS, }
S. India, }
March 11th, 1897. }

CATTLE AND POONAC: COMPARATIVE VALUATIONS.

RE,—I am afraid your correspondent "Poonac" in his letter on this subject in your last issue has got slightly out of his head. His figures for the nitrogen in cattle manure and Poonac, *i.e.*, $\frac{30}{4}\%$ and 10% , are both too high. The former cannot safely be put higher than $\frac{1}{2}\%$, which gives about 11 pounds of nitrogen per ton. The latter is certainly far too high, as the average for South Indian Poonacs is 3% to 7% , a safe average being about $4\frac{1}{2}\%$, or about 100 lbs. of nitrogen per ton. Taking these figures for cost on the estate and application on the estate as correct, for these vary in every instance, the calculation would be somewhat as follows, taking a thousand trees instead of an acre as the unit of comparison.

Cattle Manure. 1,000 half bushels every third year = say 166 bushels per annum, divided by say 40, equals say four tons = 1 per ton, Rs. 4, plus cost of application (Rs. 20 every three years = $20 \div 3$, say) Rs. 7. Total cost Rs. 11, giving at $\frac{1}{2}\%$ of nitrogen, 92 lbs. of that element, at the remarkably low cost of 1 anna over 2 annas and 9 pies per lb.

Poonac. 1,000 $\frac{1}{4}$ lb. doses every year = 250 lbs. or say $\frac{1}{5}$ th of a ton, which, at Rs. 60 per ton, equals Rs. 6-8, plus cost of application Rs. 10. Total cost Rs. 16-8, giving at $4\frac{1}{2}\%$ nitrogen, about $11\frac{1}{4}$ lbs. only, at a cost of Re. 1-7-5 per lb.

Perhaps friend "Poonac" will reconsider his "very obvious conclusion." For, at a lower price, (taking his figures for cost as correct,) cattle manure gives him 92 lbs. of nitrogen *versus* only $11\frac{1}{4}$ from Poonac!

I may state here that I cannot help thinking that "Poonac" goes wrong both in valuing the manure at so low a cost as one rupee per ton, and in his estimates of cost of application. It would be interesting to hear how he arrived at his results. A more usual price is Rs. 4 a ton, though in some places it goes as high as Rs. 8 a ton. Anyway, he should exercise a great deal of caution in framing his estimates and obtain the advice of some more experienced neighbour. More information on this point would be interesting to

A DOUBTER.

THE ANTI-BUG PARASITE?

DEAR MR. EDITOR,—In answer to your request, which evidently applies to me, I have much pleasure in relating my experience on the above subject. It is with great diffidence, and a large query, as you may observe, that I name the pest-destroyer as above, for what its proper name is I leave it to those who have a knowledge of such things to decide.

This account will, I trust, promote a discussion in your valued columns on a subject which, as it at present appears, may deeply concern the planting community in general.

Some six months or more ago, bug of the black variety was only too distressingly evident on certain blocks of coffee on my estate, and I had experienced a proportionate amount of worry, by its persistent ravages, when one day (as I was observing with fast waning interest the conduct of certain common lady-birds on some bug-stricken coffee to which I had brought them to see whether or not they would cultivate a taste for our black enemy) I was attracted by patches of what at first appeared to be the rather discolored remains of the web—I shall call it, for want of a proper name!—of the green bug. On further examination, I found this substance somewhat dustily covering the stems and leaves of the coffee trees and only where the black-bug was located. On and round every bug-cell was a thicker and more solid-looking accumulation of the substance, and I found that in every instance where the parasite either covered or surrounded a bug-cell the contents of the cell were dead. A further careful scrutiny of every patch of black-bug disclosed its accompanying destroyer, in the shape of this parasitic growth, doing its work thoroughly and perfectly. For the benefit of my brother planters who may not have noticed the presence of this fungus, or parasite—or whatever it is—I will try and describe it. Where thickest to the naked eye it resembles flour made into a dull, not shiny, paste, which has turned *slightly* green in colour; where thin it seems like an irregular dusting of dirty flour, and in some places it even seems like a dirty buff-colored lime-wash. The above, though a very poor description, should enable anyone to recognise this perhaps very valuable parasitic bug-destroyer.

I imagine it to be a vegetable growth, and it seems to spread rapidly, and what is a most important recommendation—it *only* *harms the pest*; for, where it has done its work, an examination of the stem or leaf under it shows the stem or leaf to be of a fresher green than where the bug has not been located. Another strong argument in favour of this destroyer is that it is a remedy supplied by *nature*; and let us hope it will prove itself to be such in every sense of the word, and *not* another pest in disguise!

Time will show which it is; but at present I believe it to be

the *most complete* remedy I have ever seen used against that formidable enemy the black-bug.

It seems evident, from examinations made under the microscope in conjunction with some planting friends near Kullakamby not long ago, that the bug is killed by the parasitic growth excluding the light and air necessary to the life of the pest. I would ask those friends to be so kind as to publish their own experiences on a subject of such general planting interest.

"XNAN."

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* contains per ton :—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric acid.

Orders booked for the coming crop of seed from the parent trees of above analysis at Rs. 3 per 1,000.

Manager, ARIENKOW ESTATE,
SHENCOTTAH,
Tinnevely.

COFFEE.

North Wynaad.

We learn that the new "Coorg clearings" in this district are coming in extremely well, and promise to more than justify the sanguine hopes held by their proprietors.

Local prices.

A Nilgiri planter complains, that despite the striking experiences detailed by Wynaad planters recently, he can't obtain anything higher this year than Rs. 12 per bushel for well-cured *parchment* at the works, against the Rs. 11-1-0 obtained by "Wynadien" for half ripe cherry on the estates.

The New Hebrides.

This group of islands is quickly making a name for itself as a profitable field for coffee planting, as we have already noted in these pages. Leaf-disease and borer being still unknown, the yields reported seem fabulous to the younger generation who knew not the cropping powers of coffee in the good old days. The islands are in the Pacific, off Australia, and are virtually independent, being claimed alike by England and France. British and Australian capital has been freely invested, and though the labour question has yet to be satisfactorily solved, there are many worse places for coffee planting than the New Hebrides. A sample of coffee grown there was recently sent to Ceylon, where it was valued at 90s. per cwt. The bean was small, but regular.

The berry in Upper India.

It is curious to note how soon planters, after a short absence from a district or country, get out of all touch of what happens therein. A writer in some Calcutta exchanges, who left South India some twelve years or so ago, lately affirmed that coffee disease was extinct in South India, and that consequently the pest might be absolutely disregarded in Upper India. How utterly wrong such a statement is, is almost needless to point out, except

for the benefit of our Assam and Cachar readers. La however, estimates, which were formerly based on average crop of $7\frac{1}{2}$ cwts., have come down to more reasonable figures. With manuring three times a year irrigation facilities to help out a dry season, $4\frac{1}{2}$ cwt. acre are not, perhaps, too much to expect.

Manure mixtures.

It is not a little absurd to men talking of adopting this or that mixture, usually known by the names of the men who picked a few good crops following its application, without the least idea—save by reference to their files—of the composition of the mixture. A "mixture" may in particular cases be exactly the thing the coffee requires, another plantation, even if only a few miles off, through difference of previous treatment and soil, require something altogether different. Chemicals, as distinct from artificials, are often used in these mixtures, and in touch with ignorance of the insoluble combinations and waste which occurs from such combination, especially if more than a day or so elapses—as must invariably be the case—before application to the field. In the districts where heavy rain fall is the rule, the bulk of the nitrogen used is certainly not be in any less soluble a form than pod fish or dried blood. At special times, after the heavy rains are over, or some months before they begin, a reserve of nitrate of soda or the less soluble and cheaper (reckoning price per pound of nitrogen) sulphate of ammonia may be used with advantage, if the trees demand it. If applied at other seasons there will be an enormous waste. By way, if the object of the chemical manures is, as is usually the case, to give the trees an immediate fillip, the best way the manure is distributed among the feeding roots of the trees, the quicker will be their action and the less waste there will be from subsequent rain washing away the unabsorbed balance. It may be taken as an axiom that the more concentrated the manure used, the greater the need for its diffusion and thorough incorporation with the soil.

The coffee campaign.

We believe it would be an excellent thing if the U. P. A. v through its London representative, to address the U. P. Grocers' Association of England with a view to bring producers and consumers a step nearer each other. The Grocers' Association is a very powerful body indeed, and if it were made clear, as it undoubtedly could easily be done, that it would be much to their advantage to only sell coffee instead of the adulterated abominations they dispose of, a great obstacle to the free consumption of coffee *au naturel* would be removed. It could be arranged without difficulty that the grocers, or such of them as were willing to meet half way, would be granted facilities for purchasing the material direct, or all but direct, from the producers. The prices would be mutually most satisfactory, planters and grocers alike sharing in the profits now made by the middlemen, the brokers.

If this policy of persuasion is not found to act, then measures of semi-coercion, already set forth in our columns, must be resorted to.

The first step undoubtedly is to appoint a small strong committee to devise the plan of action. Once

KALLAI WORKS, CALICUT.

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MANURE SEASON 1896-97.

Fish Guano.—A Speciality. Specially prepared and manufactured from Fresh Fish in new patent machinery and under a new process.

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Superphosphates.—Nitrate of Soda, Sulphated Salt, Muriate and Nitrate of Potash, Basic Slag and other imported manures. Quotations will be obtained as early as possible.

MANURES MIXED IN ANY PROPORTION FREE OF CHARGE.

Coir Matting of every description, from the finest quality Twill to Common Estate Shade Matting. Prices from Rs. 15 to Rs. 1-8 per roll of 10 ft. by 3 ft.

Quotations and further particulars will be furnished by our Callicherry and Mangalore Agents for delivery at their ports, and by the undersigned.

D. N. MORISON,

MANAGER, KALLAI WORKS.

"Englishman," August 1st, 1896.

APPRECIATION OF AN INDIAN MIXTURE.

Messrs. CHILD & CO.,

The Wholesale Tobacconists of Chowringhee, are in possession of an autograph letter from Mark Twain.

"Indian Daily News," August 1st, 1896.

Mark Twain left a substantial memento of his visit behind him in Calcutta in the shape of a letter addressed to Messrs. Child & Co., and an old Mississippi pilot knows what good tobacco is, even when he takes to literature.

MARK TWAIN.

Calcutta, February 8th, 1896.

MESSRS. CHILD & CO.

SIRS,—This is the brand I wanted. I have smoked your Honey Dew Mixed in another part of the world, and learned to prefer it.

Truly yours,
S. L. CLEMENS.

CHILD & CO.'S HONEY DEW MIXTURE

Is prepared from the four finest growths in the world, viz:—

Sun-dried Virginia (sweet and mellow), Old Kentucky (full flavoured), Turkey Dubec (mild), Latakia (fragrant). All finely matured in bond, and judiciously blended.

It is a faultless Pipe Tobacco, being of medium strength,

WITH DELICIOUS FLAVOUR.

THE FINEST THAT CAN BE MADE. NO EQUAL.

In $\frac{1}{4}$ lb. air-tight tins, Rs. 2-8 per lb.

CHILD & CO.,

WHOLESALE AND RETAIL TOBACCONISTS,

MESS AND CLUB CONTRACTORS,

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PER-PHOSPHODINE, A SAFE, PROMPT AND RELIABLE PHOSPHORIC REMEDY

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NEURALGIA, Nervousness, Lassitude, Overwork, Brain, Nervous and General Debility, Failure of Memory, Dimness of Sight, Depression of Spirits, Impoverished Blood, Liver Complaints, &c.

This is a stable and reliable solution of Free Phosphoric Acid (Unoxidised Phosphorus) combined with Iron, Quinine and Strychnine. It is thus a valuable and highly efficient combination of nerve tonics, and will be found admirably adapted to the treatment of all ailments which have their origin in nervous exhaustion.

It will also be found very useful in convalescence from fever and other debilitating diseases.

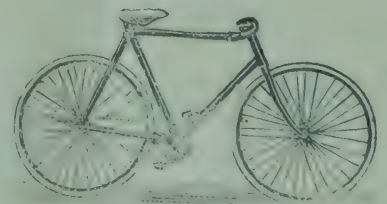
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Rs. 4 per Bottle, packing charge annas 4, extra.

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decided upon, a fund can be raised to any desired amount. until planters have a strong and capable committee to present them, and know approximately on what lines the campaign is to be worked, they will naturally be chary of their subscriptions. The movement has now developed to the extent, we take it, of practically all concerned agreeing that a decided effort should be made to push the consumption of our coffee. Brazil has led the way, it behoves us to overtake our rival before it is too late. Wherefore the sooner a committee is appointed the better.

London market. The continued heavy receipts in Rio and Santos have had, says the *Produce Markets Review* in its issue of 20th ult., a further depressing effect upon prices in the terminal market, and quotations have given way from day to day until yesterday, when there was a slight reaction. The fall has produced a much larger business, and the feeling is growing that with every probability of reduced receipts, a reaction will set in, and that prices are quite as low as they are likely to be. In the case of Java coffee, the business transacted is still very much of the same old character, as supplies continue to come forward very freely, and it is felt that the present range of prices can hardly be maintained, when there is a greater variety to select from. Plantation Ceylon is likely to continue so scarce this season that the enormous prices recently paid there are not only been maintained but, an advance of 1s. has been established. East Indian has also sold at exceedingly high prices, but as the arrivals recently have been heavier, and the auctions next week will most likely be larger than before this year, some decline may be looked for. Of Central American sorts, coloury Guatemala has sold rather dear, but Costa Rica has maintained its value. The common grades show no change.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week end- Feb. 13, 1897.	Tons. 286	Tons. 240	Tons. 257	Tons. 243	Tons. 7,838	Tons. 7,543
For the 6 weeks end- Feb. 13, 1897.	1,618	1,554	1,430	1,353	—	—

BEES AND THE FERTILISATION OF THE COFFEE BLOSSOM.

THE subject of the fertilisation of coffee blossom is, I trust, of sufficient importance to make it unnecessary for me to offer any apology for returning to a friendly discussion of the question with your original correspondent with a view to its more thorough elucidation.

With reference to the tree which I mentioned as being covered with honey-combs twice a year, I may state that I believe the bees were in the habit, as your correspondent suggests, of visiting it years before there was any coffee in the district; but one would have thought from the reasons enumerated in your impression of the 9th ultimo for

imagining a coffee estate to be about the last place to find bees in large numbers, viz.: that the coffee plant is in flower for a very short period, and with the exception of this tree there is very little that the bees can get honey from, the shade trees even not flowering more than once a year—one would fancy, I say, from all this that the bees would have forsaken the place when the district was cleared and planted with coffee, for being converted into a coffee estate there would be very little for the bees to get honey from, &c. If your correspondent had said that the lack of suitable quarters for the bees to hive in was against their occurring in large numbers on a coffee estate, it would have been very different, but it will be noticed that this was not given as a reason for “a coffee estate being about the last place to find bees in large numbers.”

However all this is beside the main question as to how the coffee blossom is fertilised. In the opinion of your (original) correspondent it is for the most part self-fertilising. He says:—“The flowers are in dense masses, so that the slightest puff of wind would blow the pollen from the anthers with the probability of this pollen catching on to one of the *adjoining stigmas*.” (*Italics are mine.*) But let me point out before I proceed further—and this will make clear my reason for underscoring the words ‘adjoining stigmas’ in the above quotation—that the pollen from the anthers of a flower *must reach the stigma of the same flower* before it can be said to be ‘self-fertilised,’ for if the pollen of one flower reached the stigma of another flower either contiguous to it or far removed—and it must be admitted that this is just as likely to happen in the case put by your correspondent as for pollen from the anthers of a flower to be transferred to the stigma of the same flower—it matters little by what agency the transfer is effected, it would be cross-fertilisation.

But in works on Botany ‘Self-fertilisation,’ appears to me, has a more restricted meaning. It is restricted to flowers in which special arrangements exist to secure self-fertilisation such as the cleistogamous or closed flowers, the interiors of which are utterly inaccessible to insects; and others in which the anthers bend over the stigmas and shed their pollen on them, &c. This only occurs in low degraded types of flowers such as Groundsel and Shepherd’s purse, &c. (Grant Allen: *Story of the Plants*. Rev. Henslow: *Origin of Floral Structures*.) Now coffee cannot surely be classed amongst degraded types of this description, for “we know,” as Wallace says in his work “*Darwinism*,” “that when petals cease to be required for the attraction of insects, they rapidly diminish in size, lose their bright colour or almost wholly disappear,” and this has certainly not happened in the case of coffee.

But I had forgotten. Your correspondent does not hold that the coffee blossom is fertilised by any movement on the part of the anthers or stigmas or any special arrangement about the flower, but that it is effected for the most part by the agency of the wind. Now just let us examine for a moment the characteristics of wind-fertilised plants and see if we can find any good grounds for saying that coffee blossom must be largely fertilised by wind agency. Grant Allen says (and other authorities agree with him) “Bright-coloured petals and stores of honey will not serve to allure the unconscious breeze; such delicate adjustments of part to part as we saw in the case of bee and blossom will no longer be serviceable. What will most be needed now is

quantities of pollen; and that pollen must hang out in such a way from the cup as to be easily dislodged by passing breezes. Hence wind-fertilised flowers differ from insect-fertilised in the following particulars. They have never brilliant corollas or calyxes. The stamens are usually very numerous; they hang out freely on long stalks or filaments; and they quiver in the wind with the slightest movement. On the other hand the stigmas are feathery and protrude far from the flower, so as to catch every passing grain of pollen. More frequently than among the insect-fertilised section, the sexes are separated on different plants or isolated in distinct masses on neighbouring branches. But numerous devices occur to prevent self-fertilisation." Note that even in the case of flowers specialised for wind-fertilisation, devices exist to prevent self-fertilisation. Now the coffee blossom possesses none of the characteristics of wind-fertilised flowers; and I am convinced in my own mind that the pollen is not dry and powdery enough to be easily detached from the anthers and blown about by every passing puff of air.

To my mind the very fact that the coffee blossom is attractive looking, possesses a scent, secretes nectar, and above all is visited by bees and other insects directly it opens, is sufficient proof that it is entomophilous; for we read that the degraded types of wind and self-fertilised blossom are the result of the neglect of insects to visit them, and they have lost all unnecessary parts; and as I said in my previous article, if the coffee blossom were capable of wind-fertilisation, Natural Selection would have taken care that it had no useless appendages. The very fact that flowers are visited by bees is a sufficiently convincing proof that they are entomophilous to Grant Allen, who in speaking of willows says that one can easily satisfy one's self that they are insect-fertilised by standing under one in early spring when one will hear all the branches alive with the buzzing of bees: but I suppose Mr. Allen is not a sufficient practical authority for your correspondent. However he is accepted as one by Mr. A. R. Wallace, the Naturalist.

I will now state how I think the coffee blossom is fertilised. I think the pistil and stamens are so placed as to preclude self-fertilisation. When the blossom opens the stamens fall away from the stigma which protrudes far out beyond the stamens. The stigma is two-lobed and shaped like a Y with the style. It appears to me that when the bee inserts its proboscis into the nectary it gets covered with pollen, and when removing its head it knocks against the under sides of the lobes of the stigma which prevents self-fertilization, and when it visits another flower it knocks against the top surface of the stigma and thus cross-fertilises it. I have watched a bee at work, and this is the idea I have formed of the way in which the blossom is fertilised.

Your correspondent makes a great point of coffee, as he says, coming up twice to seed. They do so to the superficial observer, but I think if plants grown in a nursery prepared exactly alike throughout were critically examined they would be found to differ slightly. Do not some seeds germinate sooner and some plants make better growth than others although equally nourished? There would appear to be no doubt that plants differ in constitution. This would seem to be the reason why there are so many failures as the plants are unsuited to the environment that suited

their parents. If conditions could be so altered as to plants that differed from their parents, many differences would be apparent which are now not noted because plants not suited to the old conditions usually die out. It accounts for the persistence of a species.

To come to your correspondent's quotation, I may say that I think it refers to what is observed in garden green house cultivation. Results are obtained in green houses by the manipulation of a camel's hair brush that are of much slower attainment in a state of nature. It seems to have missed the fact that the part underscored by him is advice to *hybridisers* and *raisers of seedlings*. The only way to prevent cross-fertilisation is by excluding bees, and this is easily done in a green house. I am not satisfied that close-fertilisation is the same as self-fertilisation, even if it is, it may mean that under forced cultivation flowers lend themselves to close-fertilisation and that a hybridiser should arm himself with a camel's hair brush and take advantage of this.

H. G. P.

THE BRAZIL COFFEE CROPS.

VARIOUS have been the estimates formed within the last six months of the size of the current crops of Rio and Santos coffee for the year 1896-97, they together having oscillated between 6,000,000 bags and 8,000,000 bags; and although the present season will not be entirely over until July next when another campaign begins, the probable outturn may be pretty accurately gauged. The maximum amount of the production of Brazil coffee for this year, there says the *Grocer*, turns out to be nearest the truth, and is distinguished by being the largest on record. The actual figures are given by Messrs. W. H. CROSSMAN & BROTHER, of New York, who reckon the yield at 8,500,000 bags, made up by 3,750,000 bags Rio and 4,750,000 bags Santos; and those authorities who pinned their faith to the estimate of 6,000,000 bags, or thereabouts, and speculated accordingly must now acknowledge that they were seriously in error. The growth and development of the Brazilian coffee crops of late years has surpassed all calculations, as will be seen by the following statements. First, the joint receipts of Rio and Santos at the shipping ports for the seven months ended the 29th ult. were 6,323,000 bags, in striking contrast with 4,349,000 bags in 1895-96, 4,714,000 bags in the preceding year, and 3,045,000 bags in 1893-94. Secondly, the total shipments from these places to Europe and the United States in the same period have been 5,377,000 bags, opposed to 3,926,000 bags last year, 4,243,000 bags in 1894-95, and 2,807,000 bags in the former season. And thirdly, the stock on hand there at the end of January, 1897, reached 849,000 bags, in comparison with the diminutive quantities of 587,000 bags, 485,000 bags and 318,000 bags respectively in the other years at the corresponding date.

To render the view of the coming crops of Brazil coffee more complete, it should be added that what are called "outside" crops, apart from Rio and Santos, such as are raised in Victoria—Barrage and Ceara, should be included in the general estimates of the quantities harvested, and these are reckoned to produce, on the average, 5,400,000 bags, so that the aggregate supply of Brazil described for the year 1896-97 is not likely to fall far short of 14,000,000 bags. It is thus quite clear that the incoming crop is much heavier than first predicted, and this tends to shake one's confidence in the reports that are circulated from time to time by parties interested in keeping up prices to the highest point. Often we hear of frost in July, too much rain in August, drought in October, heavy rain in November, drought again in December, and too much rain due in January, till the ordinary observer of events in connection with coffee cultivation in the Brazils gets bewildered, and is seldom that he is adopting the right course for either a rise or fall in market quotations. As Messrs. Crossman observe, "That the speculators in London and in Europe who are heavily involved should, through their branch houses, foster these reports, can

re easily understood, but it taxes the intelligence of the coffee trade generally a little too heavily to try to force upon them the idea that 'drought' and 'rains' can cause damage at one and the same time, and to believe that young and inexperienced firms in Brazil should possess a more accurate knowledge of conditions throughout the country there than the old and recognised leading firms who have from fifty to sixty years' experience in the same business, and whose forecasts concerning the crops have proved exceptionally correct when figuring on crop yields months before the season really commences."

A decline in prices has consequently been no more than what might have reasonably been expected, and that this has not yet inflicted any great hardship on the growers or producers, considering that they are still making 100 per cent. profit on coffee cultivation, is proved by the fact that there is an enormous increase in the acreage of coffee plantations in the State of Sao Paulo, in Santos, and that the rearing of the plant appears to be extending in all parts of Central and South America. The days when planters in those regions could obtain a return of 150 per cent. to 200 per cent. for their capital and labour in bringing the coffee berry to perfection are evidently gone for the present, and they may prepare themselves for an interval, more or less prolonged, of lower rates. Since the opening of the year there has been a sensible reduction of about 3s. per cwt. in the value of "futures," as Santos of good quality which was worth 53s. to 55s. 6d. for immediate and forward deliveries, has recently been offering at 50s. 6d. to 52s. 6d.; and as the downward movement spreads, so are quotations for the higher-class descriptions from East India and other coffee liable to undergo some reduction—a result which would be most welcome to home-trade buyers of the article in this country.

THE MANAGEMENT OF SOILS UNDER COFFEE, &c., IN THE MADRAS PRESIDENCY: A PRIZE ESSAY.

By THOMAS CLARKE, ESQ., TENCASY, TINNEVELLY.

The following interesting remarks on the cultivation of coffee gained the prize given by the Madras Agricultural Exhibition in 1883. We reprint at the desire of a correspondent and by the kind permission of the Madras Agri-Horticultural Society, trusting our readers will find it of practical value.—ED.]

I.

How to maintain the fertility of the soil is a question which is every year gathering greater force all over the world, and to which the answer is happily growing every year more distinct, as the researches of the chemist, backed up by the experiments of the practical farmer, are bringing science to the assistance of agriculture. Cultivators of coffee have not, however, hitherto reaped the full benefit of the advance in scientific agriculture, because, working under conditions somewhat special, they have not yet sufficiently tested theory by experiment, but have been too content either to run in the old groove of tradition, or else to accept conclusions arrived at under different conditions, as equally applicable to their needs.

Profitable manuring.

"Off course," says the sleeping partner in a coffee estate, whose remittances from his formerly productive property are gradually growing smaller, "you must return to the soil the plant food you remove in your crops." No doubt; but the working planter finds he must do this so as to show a profit on the operation and here comes the difficulty. As an agricultural chemist puts it:—"In theory we may convert any defective soil into a fertile and complete one by the addition, in proper quantities, of those materials it is deficient in; and on a small scale we may carry out the theory in practice. For instance we may make a garden on any kind of soil, and, by the addition of proper materials, soon prepare a fertile mould capable of producing, in luxuriance, every kind of plant whose growth the climate will permit. But in practice, on a large scale, as on the land of our farms, the case is very different. The alteration we can effect in the character of the land in this manner is limited by considerations of cost; the question in these cases is, not what can be done, but what can be done to pay." And when the planter begins to work on his theories, subject to this limit of £ s. d., he very soon finds that the conditions under which he is working, to a great extent,

forbid his taking advantage of the experience—accumulated for years in European agriculture, and that he must start in a comparatively unworked field, and ascertain for himself what can be done to pay. The enterprise in which he is engaged is a young and comparatively limited one, schools of agriculture do not concern themselves with it and there are no wealthy individuals to undertake disinterested experiments for the general good as in England. He has kept cattle for manure at great cost, and they have kept his coffee in good heart and paid well till two or three successive short crops from leaf-disease or some unknown cause have forced him to lower his expenditure and sell off his stock. He then consulted an agricultural chemist, who told him that by substituting bones and poonac for his cattle manure he can supply the same elements of plant food to his land at less than half the cost, and without any great expense for application. He has tried that successfully for a time, but his coffee has seemed to exhaust itself in its efforts to bear, and there has come a bad season, he has no crop in return for his heavy expenditure on artificial manure, his resources are exhausted, and he sees nothing for it but to acquiesce in the gradual defertilization for his soil, taking from it what he can get, but laying out nothing upon it.

Experimental fields.

If this state represents the present condition to the coffee enterprise, and any remedy is to be found, it must be by the combination of all concerned to ascertain, by careful experiment, the best method of applying to the cultivation of hill sides in a tropical climate the principles of scientific agriculture. In their associations throughout the country planters have, ready-formed, an organization, which, with a little assistance and direction from an intelligently worked agricultural department of the Government, might be made to do the work of a Cirencester and a Rothamstead and so diffuse knowledge, which would probably save from extinction a most important industry. An experimental field in each district worked, under the direction of a central authority, by which all results should be carefully collected and circulated, would not only bring its results under the notice of planters in all parts of the country, but would save much time by the division of labour. The initiation and direction of such a scheme must be undertaken by the Government, also probably the scientific advice and analyses required, the cost of working should be borne by the planters, but there is no reason why the experimental fields, once started, should not be self-supporting. I will illustrate by an instance the benefit that might be expected from such systematic experiments, and which cannot be obtained in any other way. Mr. Gibson, in his Agricultural Chemistry, discussing the proper respective uses of farm-yard and artificial manures, makes the following statement:—"The manure produced on a farm should contain all the fertilizing elements extracted from the land by the crops raised upon it, with the exception of those contained in the grain, cattle, or other produce sold of the farm. Hence if the manure made on the farm has been properly preserved, we can return to the land in this shape all the materials borrowed from it for the growth of our crops, except those carried away in the manner above noticed. To make good this deficiency we should employ artificial manures; since in these we possess a ready and convenient means of restoring to the soil those more essential constituents, permanently removed from it by the produce sent to market." Now, if it is desirable in England to restore to the soil the materials removed in the produce sent to market, by means of artificial manures, how much more so in the case of land, situated as most coffee estates are. Yet, planters as a rule look upon artificial manures as dangerous stimulants, which they use only under pressure of circumstances, namely, the prohibitive cost of cattle manure. There is evidently room here for profitable experiment.

It is evident from what has been said that we are not yet in a position to lay down the law dogmatically as to the proper treatment of soils under coffee in order to maintain their fertility, but it is a subject that well repays looking into even in the light of our present knowledge, since a discovery, only of our ignorance in the matter, is a long step in the right direction.

The fertility of soils. The fertility of a soil depends upon two conditions, namely, its chemical composition and its mechanical texture, and if we find a fertile soil losing its fertility, we may safely conclude that it is in consequence of a change it has undergone in respect of one or both of these qualities. Let us, therefore, try to arrive at some idea of the extent to which these changes are going on in our coffee soils.

First the change in chemical composition, in other words, the loss

of fertilizing material. We have noticed above the distinction drawn by Mr. Gibson between constituents of the soil removed by produce sent to market and those removed by produce consumed on the farm and returned to the soil in the shape of farm-yard manure. In the case of land under coffee we shall endeavour to maintain a somewhat similar distinction, except that the constituents removed otherwise than by crop being not utilized in any way, we shall designate as waste. There are no data available to make anything like accuracy possible in such an inquiry, but I shall have accomplished my object if I can show that the amount of waste is a matter worthy of serious attention, and its prevention a proper subject for systematic experiment such as I have suggested.

Loss by cropping. Mr. Hughes in his report to the Ceylon Planters' Association of his visit to Ceylon in 1877, included an analysis of the seed, pulp and leaf removed from an acre of coffee in one year, but his result is, I am persuaded, very much vitiated by his excessively low calculation of the amount of leaf lost in a year by each tree. He takes 200 as the average number of leaves lost. I find 200 is about the average number of leaves carried by each primary branch with its offshoots, and as a tree with ten primaries is not a large one, I do not think 2,000 leaves at all too high an estimate to make of the average number of leaves dropped by each tree in a year. Moreover Mr. Hughes' calculation was meant to be for a crop of 7 cwts. an acre, but he has taken 7 cwts of parchment, which would be equivalent to about 5 cwts. 8 lb. of clean coffee. Adopting Mr. Hughes' analysis, and applying it to a crop of 3 cwts. of clean coffee per acre, a loss of 2,000 leaves from each one of 1,200 trees, the constituents drawn from the soil each year will be as follows:—

	SEED.	PULP.	LEAF.	TOTAL.
	3 cwts. clean coffee =429·68 lb. Parchment.	Fresh Pulp 465·71 lb.	Partially Dried 2,400,000 Leaves =2,470 lb.	Weight = 3365·39 lb.
	lb.	lb.	lb.	lb.
Water ...	57·16	364·83	240·00	661·99
(a) Organic matter ...	358·34	92·50	2042·00	2492·84
Mineral matters (ash) ...	14·18	8·38	188·00	210·56
Total ...	429·68	465·71	2470·00	3365·39
(a) Containing nitrogen ...	6·30	1·53	66·00	73·83
The Ash consists of—				
Potash ...	5·81	4·11	52·00	61·92
Soda ...	·27	·16	12·00	12·43
Lime ...	·82	·82	42·00	43·64
Magnesia ...	·93	·16	23·00	24·09
Phosphoric Acid ...	1·15	·38	9·00	10·53
Sulphuric Acid ...	·33	·26	6·00	6·59
Chlorine ...	·11	·21	2·00	2·32
Oxides of Iron... ..	·38	·11	2·00	2·49
Silica ...	·38	·32	16·00	16·70
Carbonic Acid ...	4·00	1·85	24·00	29·85
Total ...	14·18	8·38	188·00	210·56

I imagine most planters will be astonished to find how heavy is the drain caused by the loss of leaf upon the resources of their soil, and the injury caused by leaf disease becomes easily understood in the light of these figures. If we disregard the water and the organic matter other than nitrogen, we find that, whereas a crop of 3 cwts. per acre carries away but 20½ lb. of valuable constituents, the pulp of the same crop and the leaves dropped in the year account for no less than 263 lb., which, unless returned to the soil, must be set down as waste. It may be said that the leaves are returned to the soil, in as much as they decay where they fall, and become mingled with the soil. To a limited extent, no doubt, that is so, more especially in coffee grown under shade; but, unless some measures are taken to keep them, by far the greater part are carried by the wind to the nearest stream, and thence washed away with the first rain.

There remain still three channels for the exhaustion of the riches

of the soil, viz., prunings, weeds, and wash, but it is not easy to estimate the amount of loss due to them. Prunings, even when are not buried as they should be, doubtless lie to a great extent where they fall, and are not carried away by the wind as is the case with leaves; and the loss by weeds must vary widely on different estates so that I shall not attempt to reduce these two items to figures.

Loss by wash. But the greater despoiler is wash. mischief goes on quietly and unobserved even during a heavy shower, so that we are hardly conscious of the amount of our loss. To get some idea of what this is, let us suppose that one inch of the surface soil is carried away in the first year after an estate is opened. Taking Mr. Hughes' analysis of good coffee soil in Badulla as an approach to the composition of the uppermost inch of soil, we find that the constituents lost each year in one-fifth of an inch of surface soil would be as follows:

Water ...	3,371
(b) Organic matter and combined water ...	5,111
Oxides of iron and traces of manganese ...	2,871
Alumina ...	3,801
Lime ...	81
Magnesia ...	71
Potash ...	71
Soda ...	Trace
Phosphoric acid ...	81
Sulphuric acid ...	31
Chlorine and carbonic acid ...	1,251
Silica soluble in alkali ...	33,031
Insoluble silicates ...	33,031
Total ...	49,801

(b) Containing nitrogen ... 11

The sample analysed by Mr. Hughes was taken from a particularly good soil, which had been thirty-five years in coffee, with manure, and had been surface-drained only three years before the sample was taken. The proportion of phosphoric acid is unusually large, but the other important elements of a fertile soil, viz., potash, and nitrogen, are not present in larger quantities than might reasonably be expected in the uppermost inch of soil of a clearing, which would include all the ashes after the burn. At the same time I am afraid that a loss of one-fifth of an inch of soil each year, for the first five years in the life of a coffee estate, is a rate below the average; and I am sure that, on undrained clearings, the loss must reach three or four times that amount.

Total loss. We have thus arrived at a rough, perhaps, for our purpose sufficiently accurate estimate of the constituents removed per acre from soil under coffee in crop, leaf, and wash, and we cannot but be struck by the proportion which the elements contained in the crop bear to those lost in waste. If we tabulate the four most important elements by side, we shall see this more plainly.

	Crop.			Waste.		
	Seed.	Pulp.	Total.	Leaf.	Wash.	Total.
	lb.	lb.	lb.	lb.	lb.	lb.
Nitrogen ...	6·30	1·53	17·83	66·00	112·00	178·00
Potash ...	5·81	4·11	9·92	52·00	45·00	97·00
Lime ...	·82	·82	1·64	42·00	83·00	125·00
Phosphoric acid... ..	1·15	·38	1·53	23·00	74·00	97·00
Total ...	14·08	6·84	20·92	169·00	322·00	491·00

It is almost appalling to consider that each year as much valuable matter is carried away as would be required to produce several such crops as we now look upon as an average yield; yet I shall escape from the conclusion. So little has this been recognized in 1879 Mr. Hughes wrote to the Ceylon Planters' Association: "If the pulp is not returned, and the leaves are allowed to be carried away till they choke the drains and cause extra damage by rotting still if the above figures are accepted, coffee is not so exhausted

ordinary crop of turnips or wheat." That this is the case, if we only the crop into account, the following table will show:—

	Coffee.	Wheat.	Turnips.	Beans.	Maize.
	3 cwt. Bean 93 lb. Parch- ment skin, 465 lb. Pulp.	28 Bushels Grain, 18 cwt. Straw.	20 Tons Bulbs, 4 tons Tops.	35 Bushels Grain, 1 ton Straw.	48 Bushels Grain, 1½ tons Straw.
	lb.	lb.	lb.	lb.	lb.
Wash ...	9.92	22	140	64	56
Manure ...	1.64	8	90	25	13
Phosphoric acid ...	1.53	20	45	16	31

But, if we add the waste in the case of coffee, and deduct in the case of the other crops, the amount returned to the land, the result will be very different.

Here then lies the whole secret of the progressive defertilization of coffee soils. We have heard, and read, of the established principle in Europe of returning to the soil in manure the constituents removed by the crop, and, ignoring the different conditions, have complacently imagined that by so doing here we were maintaining the fertility of our soil. We are like the Australian Colonists, constructing a constitution on the model of that of England, and expecting similar results, without taking into account the influence that an aristocracy, which cannot be imported, has had on English political history. True, we have recognized wash so far as to see the necessity of some surface drains; but where is the estate on which wash has been completely prevented, and where is the planter who, if he could return every year the chief constituents of his crop to the soil, would not think he was treating his estate most liberally, in spite of the loss of perhaps ten times that amount in surface soil? Some idea of the importance of the subject may be gathered from the fact that the above figures for waste, by wash and leaf, represent a loss in nitrogen alone on the coffee, tea, and cinchona plantations of the Madras Presidency, which it would take an annual expenditure of more than Rs. 28,70,000 to replace by manure.

To prevent wash. It is evident that the first, and by far the most important, part of any action for maintaining the fertility of land under coffee, must be the prevention of this enormous waste, and that until this is done, we are only deceiving ourselves in pretending to return to the soil what we take from it. On most estates something has been done by surface drains, terracing, wash-holes, and forking, to reduce the loss by wash, and on many it has been very much lessened, but I doubt if it has been anywhere completely overcome, except on flat land. I know of no other method of combating it, but I believe, by a combination of these operations, it may be entirely obviated. In opening new land, if the importance of the surface soil were more fully recognized, measures to preserve it would be the first to occupy the attention of the planter, and though the size of clearings opened in the season would be very much limited the gain in the long run would be immense.

I shall endeavour to prove the economic value of such works by summing what seems a maximum expenditure upon them, and balancing that against the value of the principal elements contained in any estimate of waste; but only by actual experiment is it possible to demonstrate, first that waste can be altogether prevented, and second that it would pay to prevent it.

Drainage. Surface draining should be the first work undertaken on a clearing. The drains should be cut across the face of the hill at a gradient of one in ten to one in twelve. The distance between them must depend to some extent on the nature of the ground, from 40 to 50 feet is a common interval, but it is far too great. The cost of drains at 50 feet interval is about Rs. 20 per acre. Three, or even four, times this amount could be well spent, but the amount of labour and supervision required for tracing and cutting drains at a time when there is plenty of other work to be done to prepare the land for planting with the

first rains generally lead to their postponement to a more convenient season. If there is no other alternative, the size of the clearing should always give way to the importance of draining.

Complete terracing is not often possible on the rough ground, closely studded with boulders, which indicates the best coffee land. On a new clearing I should think it can never be carried out. On old coffee land where the roots have become exposed by long continued ravages of wash, stones are sometimes collected to form a sort of miniature terrace below each tree. These divert the flow of water, but do not prevent it, and would, therefore, not form part of a scheme for abolishing wash.

Wash-holes are pits three to five feet long by two feet broad and one and a half feet deep, cut across the slope of the hill in the intervals between the trees. In a well-drained field they do immense service by helping the rain to penetrate the soil, as well as by acting as catch drains. They also prevent the waste of fallen leaves. A very little alteration will collect all the leaves in them, where they decay, protected from the wind, and may be spread over the ground and forked in when convenient. Prunings cut up small may also be thus preserved. Wash-holes can be cut for about Rs. 15 per acre.

Forking falls more properly under the head of measures for improving the mechanical condition of the land, but it also bears on drainage, inasmuch as it stands to reason that, by allowing the rain to penetrate the soil, we destroy its power of carrying away material from the surface. At the same time it would be very rash to attempt forking except on well-drained land. The cost is from Rs. 3 to Rs. 12 according to the condition of the soil at the time.

Draining vs. manuring. Let us assume, then, that, by means of surface drains at intervals of 12 to 15 feet, costing, say, Rs. 80 per acre, and wash-holes costing, say, Rs. 20 per acre, together with twice a year loosening the soil, and forking in all the leaves and silt collected in drains, and wash-holes, for which we may allow Rs. 13 per annum, let us assume, I say, that by these measures taken in time, we have saved annually the 491 lbs. of valuable material which we have set down above as waste. We have then only to calculate the money equivalent of these 491 lb. to ascertain the financial aspect of our operations. Taking 1,700 trees to the acre, a dressing of 10 lb. cattle manure* and 1 lb. of rape cake per tree would contain about an equal amount of valuable materials thus:—

* Not having at hand an analysis of cattle manure as usually produced on estates, I have used the following analysis of moderately rotten farm-yard manure by Professor Wolff. Any correction necessary would only increase the balance in favour of drainage:—

Water	...	...	...	75.0
(a) Organic Matter	...	...	...	19.2
Ash	...	...	...	5.8
Total...				100.0
Potash	...	...	...	63
Soda	...	...	...	19
Lime	...	...	...	70
Magnesia	...	...	...	18
Phosphoric Acid	...	...	...	26
Sulphuric Acid	...	...	...	16
Chlorine	...	...	...	19
Silica	...	...	...	125
(a) Containing	...	...	...	50
According to Mr. Hughes' analysis 100 parts contain				
Nitrogen	...	...	...	5½
Phosphoric acid	...	...	...	2½
Potash	...	...	...	2

(Vide Hughes' Report, p. 107.)

	Waste.	Cattle Manure 17,000lb. and Rape Cake 1,700lb.
	lb.	lb.
Nitrogen	178	174½
Potash	97	141
Lime	125	191
Phosphoric Acid	97	86.7

The cost of cattle manure including application I take at Rs. 38 per acre for 10 lb. per tree. The value of the rape cake, Rs. 53 per ton at the coast, say Rs. 73 including transit and application, would be Rs. 56.

The Dr. and Cr. account would then stand thus:—

First year.	Rs.	First year.	Rs.
To cost of drains and wash holes ...	100	By value of manure saved...	94
Second year.		Second year.	
To forking twice ...	10	By value of manure saved...	94
Interest, say ...	10		
To balance in favor of drainage			
age ...	68		
Total ...	188	Total ...	188

Showing a large profit in favour of the drainage in the second and every succeeding year.

(To be continued.)

TEA.

Pruning and preparation of tea.

Our worthy contemporary, the *Ceylon Observer*, has barely finished its interesting discussion regarding the manuring of tea, ere it starts a new one as equally valuable on this subject heading. The first batch of letters are fairly unanimous that manuring has not affected flavour in any appreciable degree and cannot therefore be said to be the cause of the present inferiority of Ceylon to Indian teas. Heavy pruning is a more fruitful cause of low prices, but the general conclusion seems to be that Indian leaf is a great deal more carefully plucked than before, while in Ceylon quantity is still aimed at.

Light in withering.

We are told, on weighty authority, that the major portion of the flavour and aroma of tea is due to its essential oil. It is present to a certain degree in the raw leaf fresh from the pluckers, but its subsequent development is hindered or furthered in the stages of withering and fermentation. The question every practical tea-maker must have asked himself, is, what are best conditions for this development? And does the most fragrant smelling wither produce the most fragrant tea, other things being equal? If so, we can say without hesitation, that a moderate degree of warmth is essential. A dark, damp withering room will never, even in the driest weather, produce anything but a musty-smelling wither. A light and warm shed seems to bring out a markedly fragrant wither, while a dark but warm shed (such as are commonly found above the dryers) gives at best a but slightly fragrant wither. Thus far the conclusion seems obvious, that light and warmth are essential for a full development of essential oil in the wither. Have any of our readers proceeded a step further, and tested the quality of the tea from the respective withers? It would be extremely interesting to note their conclusions. Discussion on such points of practical interest cannot fail to be of benefit.

Action of tea juice.

We are asked whether the action of tea juice on the metal parts of a

roller can have any deleterious action on the quality of tea. We are not prepared to give an answer to this question off-hand, but would merely point out the undoubted oxydising action of the juice on the brass lining, if allowed to stay on it for some time. There must infallibly result from this a combination of certain of the constituents of the juice with the brass. This compound must find its way into the tea. As to how far its action affects the flavour is another question, and to be only solved by experts in conjunction with most careful comparative experiments at the factory. It might be perhaps advisable to have the brass replaced by thick enamelled iron. We have been further asked if there is any danger in allowing the tea to pass from the roll, in such cases where hard rolling is deemed advisable, to be caught in a metal receiver, either brass or zinc. Our reply must be identical with that already expressed with regard to the roller, save that the action of zinc is more marked than that on brass. The remedy here is an obvious one, to use enamelled receivers instead of plain metal ones. The only difficulty that arises is how to get enamelled containers of the requisite dimensions, 2 to 3 feet broad. This might perhaps be overcome by using Aspinwall's white bath enamel on ordinary metal, but would need careful watching and experiment before being adopted into regular use. By the way, when is the friend of the "Digested Tea Notes" going to favour us with his next peptonized lucubrations?

The London Market.

In their issue of 20th ult., the *Produce Markets Review* remarks:—INDIAN TEAS.—The market continues active, and, in some cases, slight advances have been paid. The demand, generally, is improving, and an increasing trade has been transacted, especially in good medium and the lower descriptions, due in a great measure to the difficulty that may be experienced in getting tea of a similar character later on. The proportion of the autumnal growths is increasing, and, owing to the undesirable colour of the leaf of many of the parcels, the bidding has been active for teas of earlier import. There is a steady demand for the fine and finest kinds, as the quantity offering is sufficient to meet it, values are practically unchanged. These teas, owing to their improved qualities and strength, are comparatively cheap, and as imports draw to a close, it is just possible that the market will strengthen. Buyers, therefore, can hardly do wrong in keeping a fairly liberal stock. Of the 35,509 packages brought forward at the public sale upwards of 33,000 were sold. There was an active demand for the more desirable grades of the medium and lower leaf teas, while similar descriptions of Broken met with more inquiry at higher prices, and a steady trade was done in the better sorts at late rates.

CEYLON TEAS.—The sales on Tuesday last, although small, were somewhat larger than the previous week. Prices were well maintained, the demand being particularly brisk, and more attention was bestowed on the lowest grades of Leaf Tea, which have been comparatively neglected of late. The medium kinds continue in good request, and in many instances higher prices were paid, although this may be due, to a great extent, to an improvement in quality which was frequently noticeable. Broken Pekoes have been in good supply and are freely taken by the trade at the

sent low rates, this class of tea now showing exceptional e. At the public sales 19,300 packages were brought yard, of which about 900 were withdrawn.

uring vs. heavy
uning.

They are beginning to cry out in Ceylon against the evils of heavy pruning on the health and vigour of bushes so treated, and on the temporary poor qualities of the tea. The fact is that there is a great deal to be said on both sides, as on most other planting subjects. The primary object of pruning is of course to induce a free flush. When a tree gets bark-bound, and its wood all knotty and root-footed, there are three alternatives open. One is to be content with the inevitably poor results. The second is to cut down the old wood and let new wood take its place, harshly and lastly, to renew the bark and force new wood from the stem by manuring. The former we may dismiss as being beneath the notice of any go-ahead planter. Now as to the second, *i.e.*, heavy pruning of tea, especially on poor soil. The operation results, *imprimis*, in great shock to the plant and also a very considerable diminution of the plucking area. For the first year the yield is almost nil, and what there is, is sure to be poor all

round. In some cases the tree dies out altogether, and in others a branch or whole side dies back, all proving the severity of the shock to the system. But with rational manuring, *i.e.*, small yearly applications, there is at once observed a greater flow of sap, new branches force their way out from the stem, the knots somehow get "done in the eye" and the tree flushes merrily in spite of them. Putting the matter purely on the basis of immediate outlay and return, the bare cost of heavy pruning compares most favourably with that of even moderate manuring. But to this must be added the loss of $\frac{3}{4}$ of the year's yield, and a further loss on the remainder due to poor quality of tea. The cost of manuring is not slight, it is true, but against that must be set off a larger yield by at least 50%, though allowance has to be made for a possible fall in value of the tea. We shall not attempt to work out the result, but we have little doubt that the balance would prove immensely in favour of manuring *versus* heavy pruning. To sum up, we hold that to force a weakly tree on poor soil to yield healthy flushes by means of the knife alone is simply suicidal, it weakens at once both the tree and the soil. Manuring gives better results, strengthening the tree and improving the soil.

Planters' Library.

Please note that purchasers will effect a saving by sending a M. O. or stamps for the price of the books, and one anna on the rupee for packing. The value payable commission and registration fees will be saved, while postage being charged bearing (at the same rates as if prepaid) will ensure safe delivery.

The Wynaad and the Planting Industry of South India ...By "Francis Ford," Re. 1.

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P.S.—Any books required, not in the above list, we shall do our best to procure and forward by Value Payable post only.

" PLANTING OPINION," COONOR.

THE CHEMISTRY OF TEA.

An interesting but highly technical paper on "The Chemistry of Tea" was read by Mr. David Crole at the Society of Arts recently. Sir Stewart Bayley was in the chair, and in introducing the lecturer stated that besides being an expert chemist he had also been a tea planter in Assam.

We quote from the *H. & O. Mail*:—

Chemical constituents.

Mr. Crole began by describing the various chemical constituents within the tea-plant and their action there so far as that action was yet known. The chemical constituents of tea make a list of most portentous names—tannic, gallic, and boheic acids; benzene, phloroglucin, oxyhydro-quinone. Meat tea, said the lecturer, was a horrible meal, dear though it was to the hearts of certain English folk, because the tannin of tea then taken into the system in conjunction with albuminoid matter was converted into a leathery compound which took all the time of a powerful digestion to tackle. In fact, the meat tea meant dyspepsia. Besides theine the other alkaloids found in tea were theophyllin, theobromine, assamin, quercitrin, and some other undetermined ones, which the lecturer thought should be investigated.

Mr. Crole, after dealing at length with the chemistry of tea and its organic constituents, came to the question of the chemistry of the process of manufacture. He said:—

Withering.

Whilst the leaf is withering little chemical change takes place, beyond an incipient oxidation of some of the constituents of the sap. Withering is brought about by the evaporation of a certain variable amount of moisture, but generally about one-quarter of the original weight of the freshly-plucked leaf. This loss of moisture occasions a co-concentration of the sap; if this proceeds too far, however, (1) the cells will not burst in rolling; (2) some of the constituents of the sap will no longer remain in solution; and (3) the colour during fermentation will be uneven, owing to there being insufficient sap to spread over the whole surface of the rolled leaf.

If the fresh leaf is bruised the air gains access to the sap during the withering process, and the tea is, in consequence, inferior both in quality of liquor and also in appearance, owing to decomposition and premature oxidation having set in.

If the leaf is exposed to a temperature which is excessive under the circumstances—as, for instance, exposure to the direct rays of the sun—an untimely oxidation will set in which will spoil the leaf for manufacture.

Rolling.

The object of rolling is to give a twist or roll to the leaf, and also to break the cells of the leaf and thus liberate the juices they contain, so that they may be further acted on during the next process, and also that they may be more capable of extraction with water.

On the cells being broken the sap escapes, and during the continuance of the rolling is spread all over the surface of the rolled leaf, where it is in a very favourable position for the oxygen to act on it during the next stage of manufacture—*viz.*, fermentation. Some of this exuded sap is acted on by the hot air contained within the box of the rolling-machine, and in consequence a portion of the organic acids (chiefly the tannin) undergo partial oxidation. Some of the tannin combines with the oxygen to form phlobaphene (Bamber), and also glucose and gallic acid, assuming a dark insoluble form during the process, while part also combines with some of the albuminoid matter, an insoluble, leather-like substance resulting.

These two last reactions are only incipient at this stage, but are fully developed during the next process (fermentation).

Fermentation.

The next process, *viz.*, fermentation, is the most important one from our present point of view—*i.e.*, the chemical aspect of the subject. Strictly speaking it ought to be confined to a primary fermentation process (probably to an oxidising enzyme); for if fermentation is further encouraged (by allowing the rolled leaf to lie about heaped up for any length of time, for instance) the tea manufactured from such leaf will be spoiled. In my opinion, this species of secondary fermentation and decomposition always begins to set in after the primary fermentation is over. Oxidation pure and simple, has proceeded far towards completion, and it is to forestall the secondary fermentation, more especially, as well as to fix the primary fermentation, that the first stage of firing is mainly intended.

Mr. Bamber, who wrote on the chemistry of tea, asserts that there is no fermentation at all during the process which popularly bears that name in the industry, and he bases his theory on several experiments in which he failed to discover any micro-organisms; but recent research has shown that enzymes usually possess an oxidation action, and, again if the process is only an oxidation one, why is it of extreme importance to "fix" it by the first stage of firing at an exact moment when the climax is reached? For the firing would not fix oxidation, by any means, but would strongly tend towards hastening and increasing it. Therefore, I think that there is every reason to conclude that the technical term "fermentation" is correct.

My theory is that the process commonly known as fermentation in the tea industry is, during a greater part of the time, at any rate, mainly an oxidation one, but that later on (it takes a little time for the micro-organisms to develop and get to work), a fermentation to organism manifested by the peculiar rancid odour produced by over-fermentation of a butyric nature begins to be set up, which is desirable in the extreme to arrest at the very outset, since such action is deleterious to the quality of the tea.

Fermentation may be described as the splitting up of complex organic substances into simpler bodies, by means of either (1) living organisms, or (2) natural ferments or enzymes.

Living germs (micro-organisms) are responsible for such fermentative processes as are carried on by the yeast plant, or in sour rancid butter, or when nitrogenous matter acts on sugar to produce gum.

The natural ferments or enzymes are named diastase (in malt), emulsin (in almonds), invertin (in yeast), pepsin, ptyalin, and tryptase (the active principles respectively of gastric, salivary, and pancreatic juices).

The primary fermentation that I have described as being the one to be encouraged in tea, is due to one of the second class (*i.e.*, non-living ferment), whereas the secondary fermentation, which the one to be discouraged, and arrested by firing, can with a good deal of certainty be ascribed to a living germ or organised ferment.

For the oxidation process to be accomplished properly the following points should be observed:—

(1) The leaf should be sufficiently withered and rolled, and should be sieved to sort out the fine leaf from the coarse, as it is possible to obtain an even fermentation if the two kinds are not mixed with separately.

(2) A clean, smooth cement floor on which the leaf should be evenly spread, not too thickly, and the leaf should be kept moist.

(3) A dark, cool, airy room, with a moist draught of air if possible.

(4) The temperature of the leaf should be kept below 85 deg. As regards the temperature at which tea should be kept during the oxidation stage, I have given what I consider is a minimum temperature obtainable under ordinary circumstances in a tea-house in the plains; but I hold that a maximum of coolness during

ation, so as to protract it as long as possible (without, of course, missing the point when the secondary fermentation is in active progress), ought to be the aim in view, for reasons that will have been suggested when reading the remarks on the formation and decomposition of various substances during the processes of manufacture. In fact, it would be well worth while to ferment teas under such reduced temperature as can only be obtained in a tea factory by the artificial use of a refrigerator. I made this suggestion in my MS. of "Tea" a year ago, but I was misguided enough to circulate it. Since commencing to write this paper I was apprised of the fact that a machine had been brought out somewhat on these lines; but as it did not altogether carry out my ideas I determined, without delay, to bring out a machine myself embodying all the points that I had in mind, from a very extensive practical experience of and a large number of experiments with the fermentation of tea, were requisite. One of the most important chemical changes at this stage is an increased formation of essential oil, which it has been an aim in my machine to encourage.

The astringency of the tea is reduced by a further conversion of part of the tannin, to which this quality is mainly due, by a combination of some of the tanno-acids with some of the albuminoid matter, into a very sticky substance which imparts the characteristic tough feeling to the leaf at this stage. These two last reactions usually commence during the rolling process.

A small quantity of the tannin is changed into gallic acid and catechu, and it would be a great advantage if more of it underwent this change, since gallic acid is not nearly so injurious to the human system, when taken with albuminoid food, as tannin.

The pleasant aroma and nutty flavour of the leaf, so markedly developed during this process, are due to the formation of several volatile oils. If the process be too long continued, however, acids very similar to those present in rancid butter are formed, viz., butyric, caproic, &c. Prolonged firing will, of course, rid the tea of this disagreeable feature, but only at the expense of the greater part of the essential oil as well. This acidity, due to butyric fermentation, causes the coagulation of some of the albuminoid matter, which is usually present in the form of vegetable casein (legumin), which is an albumen resembling the casein of milk. This coagulation is unfortunate, as it converts a valuable food material (which tea is largely provided with) into an insoluble form, with the result that a large supply of nutriment is rendered useless. However, were it not already coagulated by the tannin, it would soon become so by the heat to which it would be subjected in the firing.

During the first stage of firing an increased amount of essential oil is freed by the bursting of the cells, and a further quantity is also formed by chemical action. Another action of this operation is to arrest the secondary fermentation—by which I mean that fermentation which, as I have already explained, begins to set in when the oxidation has about reached its critical point. It also removes about 40 to 50 per cent. of the moisture from the half-manufactured tea.

Special attention should be paid to avoid most of the volatile constituents being carried away and lost owing to the employment of high temperatures and draughts of too great a force.

The concluding operation that tea undergoes in the factories where it is manufactured is, of course, packing; and with regard to this, I may mention that it not infrequently happens that when a wooden chest is opened, on its arrival in the docks, the tea is found to possess a very nasty, cheesy smell, which takes some time to completely pass off. For some time the only explanation for this rather disagreeable feature that was forthcoming was that the tea, under certain extraordinary circumstances, acted on the lead lining enveloping it. But although experiments were tried to produce this state of things artificially, no action could be got to occur; and then a new theory was started, placing the whole blame of the mischief on to using green wood for the boxes, the exudation from which has a corrosive action on the lining between the wood and the tea. However, this has not been fully established yet as the cause of "cheesiness." I have little doubt, in my own mind, that both reactions conjointly produce this objectionable occurrence, and that some emanation of the green wood corrodes the lead, and then either itself, or its compound with the lead, acts on some constituent of the tea. Anyway, this is a point that naturally turns one's attention towards the several kinds of steel chests that are now being exploited.

(To be continued.)

THE OPINION AND THE FACTS.

FIRST let us have what the doctor said, then the facts upon which he based his opinion, and finally we may ask whether the facts justified that opinion.

The doctor's opinion was this, "*The man is suffering from chronic inflammation of the brain.*"

The facts as set forth subsequently by the patient himself under oath, and also verified by careful investigation, are these:—

In August, 1889, the first symptoms of disease appeared. He had a bad taste in the mouth, and a thick, slimy phlegm covered the tongue and teeth, so that he was often obliged to wipe it out with a handkerchief. He had no appetite, and after eating the simplest thing he felt great oppression, and pains at the sides and chest. Later on he was seized with dizziness and dreadful pain in the head, the back of the head being swollen, and so hot that it seemed on fire. This pain in the head grew worse, until the patient fancied his head must burst; and, as it was, he nearly went out of his mind with the agony of it. He got little or no sleep night or day, and as he could take practically no nourishment—that is, nothing at all equal to the needs of the body—he gradually fell away until there was scarcely anything left of him but skin and bone. After a time a hacking cough fixed upon him, and he constantly spat up much matter. At this point his malady had some of the indications of consumption.

For a considerable time Mr. Manning (the patient's name) was confined to his bed, and for nearly a year was unable to leave the house. As a rule he would rise from his bed about noon, and lie on the couch the most part of the day. To show his weakness we need merely say that he could only cross the room by taking hold of the furniture. The physician who attended him for one year said that Mr. Manning had *chronic inflammation of the brain*, and recommended the application of poultices and fomentations to the head.

"After having been under the doctor's treatment for a year," says Mr. Manning, "I was no better, and he said he could do nothing more for me. I then had another doctor, who said my case was hopeless, and nothing could be done for me. Our Rector's daughter got me several bottles of medicine for consumption from London, but it did me no good, and I lingered on in the same state year after year. I was in such pain that I often wished it might be God's will to take me. Several times it was reported that I was actually dying."

"In November, 1892, Mrs. Franklin, wife of the corn merchant, gave me a bottle of medicine which she hoped might do me good. It was called Seigel's Syrup. I had no faith in it, but I began taking it. In a week I felt a little better. My head was easier, I had some relish for food, and what I ate agreed with me. So I kept on with it, and gained a little every day. From that time I never looked behind me, and soon gained two stone in weight. I am now quite strong, and am back to my work. I can eat any kind of food, and am free from all pain. But for this medicine, Seigel's Syrup, I believe I should to-day be in my grave; and so great is my desire that others may know of the remedy that saved my life, I give full permission to the proprietors to publish my case if they think best to do so."

The above statement is condensed from the more extended legal one in order to save space. The other, however, will soon be published in full in another form. This is signed by Mr. Henry Delph Manning, of 3, High Street, Hilgay, near Downham, Norfolk, and has appended corroboratory statements from witnesses of high standing.

Now, we ask, was the doctor right in thinking the case to have been one of cerebral inflammation? No, clearly not, as *that* nearly always arises from a severe injury to the brain, and is usually fatal in a short time. The head trouble in this case was congestion of the brain, resulting from acute indigestion and dyspepsia, Mr. Manning's true and only disease. When Mother Seigel's Curative Syrup cured *that*, the brain and other disordered organs recovered health and tone.

MARKET SUPPLEMENT.

SATURDAY, MARCH 20, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (February 26, 1897) says:—Larger supplies were brought forward in Public Sale this week, and the market in most cases was rather easier. Nearly 3,000 bags East India have been offered and all sold at rather irregular prices, some favourite Home Trade marks realizing extreme rates.

Central American kinds have declined a further 2/- to 3/-, but here and there full value was obtained for colory parcels.

The term market was steadier during the first part of the week owing to a falling off in receipts and quotations advanced 6d. to 1/-, but at the close the market is unchanged to 6d. dearer since our last.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending February 17th, 1897, says:—Bank rate 3%. Bombay Exchange closes at 1s 3 $\frac{3}{8}$ d. Brazil Exchange 8 $\frac{1}{2}$ d. Rupee paper 3 $\frac{1}{2}$ % 62 $\frac{1}{2}$. Silver 29 $\frac{1}{2}$ d per oz.

The moderate supply catalogued during the past week met with an irregular demand; the finer kinds of East India selling well, but the extreme prices paid the previous week are no longer obtainable, except for finest. Fine Plantation Ceylon, however, continues to be well competed for. Guatemala is about 1s to 2s cheaper. Brazil markets are dull.

Daily receipts have averaged 7,857 bags in Rio, and 9,714 bags in Santos.

The daily Brazilian receipts, contrary to expectations, show no signs of any material diminution, and in consequence the market for "Futures" has declined 2s 3d to 2s 9d, and closes with a weak tone, viz.:—Good average Santos in Havre, March delivery closes at fcs. 59.25, in Hamburg pf. 48 $\frac{1}{2}$, and No. 7 low ordinary Rio in New York \$9.00.

To-day's London official quotations are:—

	Feb.	March	May	Sept.	Dec.
Rio	45/6	45/6	46/-	46/6	46/6
SANTOS	47/9	47/9	48/-	49/-	49/3

We quote:—

Ceylon, mid. to good mid. 108/@118/	Costa Rica, mid. to fine... 94/@112/
Do. small to low mid. 90/" 102/	Do. ord. to low mid. ... 78/" 92/
East India, mid. to good mid... 100/" 108/	Jamaica, good to fine ord. 73/" 82/
Do. small to low mid. 87/" 95/	Do. greenish to fine colory... 88/" 125/
Guatemala, mid. to fine... 94/" 106/	African ... 40/" 43/
Do. good ord. to low mid... 76/" 93/	Columbian, ordinary ... 66/" 71/
Salvador, good ord. foxy greenish... 73/" 74/	Do. good ord. to low mid... 72/" 93/
	Do. mid. to fine... 93/" 107/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
Rio	2,573,000	1,843,000	1,733,000
SANTOS	4,060,000	2,626,000	3,211,000
	6,633,000	4,469,000	4,944,000

Auctions:—

24 casks and tierces 4 barrels and bags Plantation Ceylon	...	@ 104/6 @ 124/6
293 bags { 44 bags Mysore, new crop	...	" 102/6 " 119/6
East India { 113 bags Coorg, new crop	...	" 91/ " 108/6
{ 136 bags Wynaad, new crop	...	" 82/6 " 103/

101 barrels Jamaica	...	@ 60/6 @
1,235 bags Costa Rica	...	" 80/6 "
2,249 bags Guatemala, chiefly sold	...	" 85/6 "
315 bags Mexican	...	" 76/6 "
25 bags Vera Paz	...	" 77/6 "
57 bags Montserrat	...	" 100/ "
787 bags Columbian	...	" 57/6 "
32 bags Bolivian	...	" 75/ "
50 bags Guayaquil bought in.		
142 bags African bought in.		
334 half-bales Mocha part sold	...	" 94/ "

On Quay Terms:—

2,267 bags Santos, part sold	...	;; 50/ "
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Prices realized at auction for the principal Marks of East India:—

MYSORE.					
	1	2	3	PB	7
M◇ } Mysore. }	119/6	113/-	102/6	130/-	95/
COORG.					
	A	B	C	PB	
Dubarry } Coorg Bamboo }	108/6	100/-	91/-	119/6	90
WYNAAD.					
	A	B	C	PB	
Colarie	98/-	89/6	82/-	108/	88
Panora Peak	103/-	94/-	86/-	113/-	88
Errumaculla	101/6	92/-	85/-	110/-	88
	bid				

Landed last week 448 tons. Deliveries 543 tons. Stock 7,838 tons.
Do. last year 555 " " 483 " " 7,543

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of February 26th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1896-1897...	1,295,708 packages.	828,538 packages.	29,680 packages.
1895-1896...	1,241,600 "	732,916 "	39,931 "
35,879 pkgs. INDIAN	}	Total 61,440 packages were offered in public auction this week.	
24,916 " CEYLON			
645 " JAVA			

Statistics of Tea for the whole of the United Kingdom, from commencement of the season, as shown by the Custom House figures, are printed in the following table.

The small increase in Home Consumption is somewhat disappointing considering the heavy crops from both India and Ceylon, a condition which shows very forcibly the necessity of using every effort to promote the consumption of British Grown Tea in markets outside the United Kingdom.

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	RS.	A.		RS.
Estate Check Rolls	6	0	Chesterman's Metallic Tapes, best quality, 50 ft.,	
Pocket do.	1	0	Rs. 7-0; 100 ft....	10
Faber's Office Pencils, H. B. & B. soft and medium,			Sill's Flexible Blotter (the best hand blotter known).	3
per doz.	0	8	Addison & Co.'s London-made Blue-black Ink, qts.	1
Faber's American Rubber Bands, per box, 10 as.,			Stephen's Blue-black (Copying or Writing), quarts...	2
14 as., Re. 1-4 &	4	8	Do. do. ... pints...	1
Faber's Ink and Pencil Erasers	0	6	Do. Violet-black Copying ... quarts...	2
Penholders, per doz., 5 as. to	3	0	Do. do. ... pints...	1
Pocket Memo. Books, 7 x 4½, limp cloth, leather			Field's Non-corrosive Black Ink ... quarts...	3
backs			Do. do. do. ... half-pints...	1
8 as. to	1	0	Field's Treble strength Copying Ink ... half-pints...	1
Pocket Cash Books, do. 8 as. to	1	0	McNiven and Cameron's, Mitchell's, G. Brandauer's,	
Letter Clips 4 as., 6 as., 8 as., 12 as. &	1	0	Gillott's, Perry's, and Walter & Co.'s (Centric)	
Superior White or Pink Blotting Papers, per quire,			pens in small and gross boxes ...from 7 as. to	3
Rs. 2-0 to	3	0		

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MINUTE BOOKS, &c., IN LARGE VARIETY.**

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land, &c. Tea land at high elevation, also coffee land, for sale, or partnership to open. Particulars to T. C., Editor of this Paper.

Small Capitalist. FOR SALE Rs. 6,000.—A newly-built brick Mangalore Tiled Bungalow, in about 50 acres of land, suitable for fruit growing or coffee cultivation under shade. Rain—80 inches. Only 3 miles from Taluk Headquarters, Govt. Dispensary Post and Telegraph Office. A good road leading to bungalow only 1 mile off Government Road. Apply sharp BUNGALOW, EDITOR, "Planting Opinion," Coonoor.

English Home and Education. A lady living at the seaside, in the healthiest part of County Cheshire, with her three daughters, who have had highest certificated education, are willing to receive and educate English children, of any boys or girls, any age up to 12 years. A thorough knowledge of English, French, German, Music, Drawing, being imparted to the pupils. Young and delicate children most conscientiously looked after. Terms and particulars on application to Z. Z., C/o Manager.

SOUTH COAST OF ENGLAND.

St. Leonards on Sea, Ancaster House.

English Education. The Rev. Frank R. Burrows, M.A., Trinity College, Oxford, receives Boys to prepare for Public Schools and Royal Navy. Ages 7 to 14. High and healthy situation, and comforts. Terms 50 to 70 guineas per annum. References kindly sent to, and particulars to be had from, C. A. Martin, Esq., LL.D., Surgeon, and Lt.-Col. G. C. Dobbs, I.S.C., Commissary-General, Bengal, Naini Tal.

Coffee Estate. FOR SALE.—A valuable Coffee Estate, in a good district, 100 acres in bearing, 25 young, 55 acres now being opened, 300 acres forest. Apply E. L., C/o Editor.

Eucalyptus Preparations. Eucalyptus Boiler Disincrustator at 12 annas per gallon in 40 gallon barrels. Eucalyptus Oil at 3/8 per 27 oz. bottle. Apply T. BROWN, "Glendale," Coonoor.

Tea Land. FOR SALE.—On easy terms, a block of 1,000 Acres of land in Wynaad, suitable for Tea. Apply "SOUTH," C/o Manager, this Paper.

Tea Land. FOR SALE. A BARGAIN.—A block of 210 acres of good Coffee Land in the Nilgiri District, planted with 20,000 4-year old coffee trees. No difficulty about cultivation. Grazing plentiful. Manure 1 a. per bushel delivered. Apply to "BARGAIN," C/o Editor, P. O.

Wooden Bungalow. FOR SALE.—A wooden bungalow containing a quantity of weather boarding, rafters, door frames, window frames, doors, windows, &c. Two Iron water-wheels. A quantity of powdered sulphur. A cash offer. Apply P. GUARD, Cherambadi P. O., Wynaad.

Rifle. FOR SALE.—450 Express, mail canvas case, re-loading and re-sizing Tools and some ammunition. In perfect order. u. c. Apply 303, MANAGER, Planting Opinion.

Good Land. FOR SALE.—Block of 1,000 acres, situated in the best district of Wynaad for the early showers; average annual rainfall 80 inches, with an average in January, February and March of over 5 inches.

Government Road from Coast to Mysore bisects the Property which is moreover bounded on the North and West by large rivers, each containing ample power throughout the year to drive Overshot Water Wheels.

The greater portion of the land faces North, North-East, and North-West, with a very easy lay, and the soil is admirably fitted for the growth of Arabica and Liberian Coffee, as well as of Tea. For further details apply to 303, C/o MANAGER, Planting Opinion. u. c.

Bangalore Orchard. FOR SALE £500 STERLING.—An orchard in good order within Civil and Military Station, Bangalore S. India, in a seven-acre block. Water available; containing a nice strongly built 8-roomed Cottage, with large outhouses and stabling for 3 horses. Estimated annual rental value £18. Fruit and other crop return £18 per annum. Further particulars, apply ORCHARD, C/o "Planting Opinion," Coonoor.

Ittithorai Coffee Estate. FOR SALE.—The Ittithorai Coffee Estate above Kullaar Railway Station on the Nilgiri Railway. Elevation 3,000 feet; 68 acres land, of which 20 in Coffee. Planted 1890. Looking fine for next Crop. Price Rupees 10,000, of which one half can be secured by a Mortgage on the property. Apply T. BROWN, Six Feby. Coonoor.

WANTED.

Liberian Seed. Wanted Liberian Coffee Seed, two or three bushels. Apply, stating the month in which it usually ripens, to H. PILKINGTON, Koppa, Kadur District.

Partner. WANTED.—A Partner to extend existing Tea and Coffee. Good District, many facilities. PARTNER, C/o MESSRS. BURNETT & SON, Calicut and Tellicherry. u/c.

Sambur and Bison horns. Wanted few pairs large horns. Particulars and price to "S. S. S.," C/o EDITOR, "Planting Opinion." Seven.

Cook. WANTED.—A Cook for Bachelors' Bungalow. Second Servant kept. Salary Rs. 12 or 13 according to qualifications. Apply Q., C/o P. O. u. c.

Bobbery Pack. WANTED dogs for a bobbery pack. Tongue essential. Apply A. H. SHARP, Devikulam. u/c.

Medical Practitioner. WANTED.—By the South Travancore Tea Company, Limited, a medical practitioner for the Kalthurthy Valley Hospital and Dispensary. Applicants must hold a diploma of, or equal to, a Madras Hospital Assistant. Apply to MANAGER, S. T. T. COMPANY, LIMITED, KALTHURTHY, Tinnevely District.

NILGIRI DISTRICT PLANTERS' FAMINE RELIEF FUND.

Famine Fund.

This fund has been opened as a branch of the fund started by the United Planters' Association of Southern India. Subscriptions (monthly) or donations are earnestly asked for from all residents in this district. Remittances should be sent to Hon. Secy., Nilgiri Planters' Association, Hon. Mr. H. Percival Hodgson, Kullakambay; Henry Wapshare, Esq., Guynd P. O.; L. W. Grey, Esq., Pykara; L. C. Liebenrood, Esq., Nellacotta.

E. G. WINDLE,
Hon. Sec., N. P. A.

Apl.

Nilgiri Tea Estate.

WANTED to lease for a term of years, or buy managing share, in a small tea estate on the Nilgiris.

Apply NILGIRI TEA,
C/o Manager.

u. c.

BILLET REGISTER.

ANY subscriber wishing to secure a billet, or desirous of a better one or in want of a manager, assistant, or writer, &c., is entitled to insert an advertisement to that effect free for as long a period as desired. These advertisements will appear on this page. Non-subscribers will be charged the small fee of one rupee.

To be worked in conjunction with the above, we have established a register, and names will be entered on application, together with copies of their testimonials. Thus should any enquiries be made for the services of a manager, assistant, &c., the names and testimonials will at once be forwarded, saving delay and trouble. Subscribers may have their names entered free; others will be charged a fee of one rupee.

BILLETS OFFERED TO.

Writer.

Wanted a Writer for Field work only, must have a thorough knowledge of coffee, keep a rough roll, and have a good labour connection. None need apply unless they have the latter. Apply A. MORGAN, Kil Kotagiri, Nilgiris. Eight.

Field Overseers.

Field Overseers from November 1896 in opening new clearing. Salary Rs. 20 to 25 per mensem. Natives only need apply.

Apply to A. H. SHARP, Esq.,
Devikulam.

BILLETS WANTED BY.

Young Assistant.

WANTED.—A situation as Assistant on a coffee estate by a young planter of steady habits, aged 20; has had one year's teaching under experienced planter in the Nilgiris; good references; small salary accepted.

Apply to H. E. C.,
C/o this Paper.

u. c.

Young Planter.

WANTED.—A billet by young planter, had one year's experience in tea planting. Will be willing to start on Rs. 50 per month.

Apply "P. I. E.,"
C/o Editor.

Seven u. c.

Assistant or Writer.

WANTED.—A situation as an Assistant or Writer on a coffee estate by a person possessing good testimonials and an experience of 15 years in coffee.

Address C. W. T.,
C/o this Paper.

Seven u. c.

Tea Estate.

WANTED immediately for cash, without incumbrance, a tea estate on the Nilgiris, with land for extension. Good bungalow and outbuildings necessary. Any reasonable offer will be considered and prompt arrangements made for conveyance.

H.,

C/o Manager, "Planting Opinion."

u. c.

No. 2123.

Cinchona Bark Tenders.

Cinchona Bark Tenders are hereby invited for the supply of Crown Bark, to be delivered at the Government Cinchona Factory, Naduvattam, before the 31st 1897. Particulars regarding form of tender, &c., can be obtained on application to the Director, Government Cinchona Plantations, Ootacamund.

OOTACAMUND,
25th March 1897.

WM. STANDEN,
Director.

Field Writer.

WANTED.—A Field Writer for a Tea Estate in a healthy district. Salary Rs. 30/- and C/o Manager, P. O.

u. c.

European gentleman.

WANTED—Employment by a European gentleman of experience, on a Coffee Estate. Willing to start on small salary. Has good knowledge of Tamil, Canarese and Hindustani.

Apply to "EPAMINONDAS,"
C/o this Paper.

Eleven.

Manager.

WANTED a situation of trust as manager European Gentleman with over 10 years' experience in Coffee or Tea. A temporary billet for say 6 months, Rs. 250 per mensem at first.

Apply F. O. B., C/o Manager.

By young European Planter.

WANTED employment as Manager or Superintendent of a Coffee Estate. Five years' practical experience in South Mysore. Excellent testimonials. Salary Rs. 150.

Apply E. P. L.,
C/o Editor.

Young Tea Planter.

WANTED position of Trust or Assistant Tea or Coffee Estate in S. India. Has had 10 years' experience in Assam. Is willing to work 6 months without a salary till he has learnt local conditions. Good references.

"A. K.,"
C/o Editor.

u. c.

Tea or Fruit.

WANTED an appointment as Manager or Assistant in tea or fruit. Ten years' practical experience, well up in the cultivation and manufacture of tea, and also the management of English fruit trees. Bachelor, age 29, active, working, sober habits, excellent testimonials and information from Manager of this paper. Can join at once.

KUMA.

Coffee Planter.

WANTED a situation in Coffee as Superintendent or Manager by a European with over 20 years' experience.

Apply I.,
C/o Manager.

u. c.

Superintendent.

WANTED a billet as Superintendent of a Coffee Estate by a planter of 14 years' experience. Testimonials and references given if required.

Apply PADD,
C/o this Paper.

u. c.

Tea Planter.

In 5 to 6 months time by a Managing Proprietor about to sell property, an appointment as Superintendent of a Tea Estate or a large tea house preferred. Mincing and Assam experience. Command of Labour.

Apply T.,
C/o this Paper.

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Books Passages by all Steamer Lines
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CEYLON.

PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, APRIL 3, 1897.

[No. 7.

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, at Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a neater volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Thursday, the 10th April 1897.

Nilgiris. SHOLUR, 29th March.—No rain since last report. Lowest and highest temperatures between 6 A.M. and 6 P.M., 50° and 81° respectively. Tea picking freely. Labour plentiful but health indifferent, there being a lot of fever about. Price of grains normal.

PUNDALUR, 31st March.—Weather.—Very hot and unbearable during the day and very cool and cloudy at nights. On the 29th evening it was very cloudy with thunder and lightning, but passed off with a few drops of rain, making things worse. **Crops.**—Out in the open still lingering from want of rain. **Plant-diseases.**—Nil. **General Health.**—Fever among the coolies. **Labour.**—Have been paid up and left for country. **Interesting Items.**—The Glenrock Company has got at Athikunnu about 100 acres of tea, Assam, full grown, having Mr. Pannett at its head. I think it would be good for the Company to open about 100 acres as the seeds can be procured from the trees without cost, as the Company holds good lands suitable for Coffee, Tea and Cinchona cultivation.

N. Mysore.

YEDAHALLI, 29th March.—No signs of any blossom showers yet. If they don't come soon a good many of us will be up a very tall tree, as spike is very forward. The big bridge over the river at Thadasa, four miles from this place, is being rapidly built under the able superintendence of Assistant Engineer J. Bhore. It will be a boon when finished, as it is on the main road connecting the great Koppa District with railway; a portion of that road is now almost impassable for cart traffic. What it will be in the Monsoon, goodness knows. Days are very hot, but cool, strong sea-breeze blows up in the afternoon.

Coorg.

POLLIBETTA, 30th March.—Signs of rain since Saturday, the 27th. Thunder and lightning in one direction yesterday. It looked very much like rain yesterday, but it cleared up in the evening. Previous to the 27th the weather was very fine and hot with high east wind and copious dew at nights at times. **Crops.**—The last set has been good, but rain is wanted to help the berries to swell. There is a good show of spike, and if the next showers are sufficient, there ought to be another good show of blossom. **Plant-disease.**—Borer is showing up to a somewhat larger extent than before, but it does not look as if it will be severe this season. **Labour.**—Sufficient. **General Health.**—Fair. **Interesting Items.**—Camp of exercise on at Mercara.

Lower Pulney.

AHTOOR, 30th March.—**Weather.**—Last fall of rain 19th February, which turned a good deal of spike to flush. No rain since, and a fair show of spike shows up now. Weather has been threatening the last few evenings, but no rain has fallen. We can last another fortnight without rain, but shall begin to need it then. **Crops.**—All despatched. Outturns generally rather disappointing; a little gleanings still being carried on. Local prices very low this year for a lack of Tail Coffee. **Plant-diseases.**—A very little green bug to be seen in places, but much less than this time last year. Leaf-disease all disappeared. **General Health.**—Fair, a little fever beginning. **Labour.**—Local labour returning after paddy harvest. Supply good. **Interesting Items.**—A planters' meeting was held at the Dindigul Club on the 22nd, followed by a few days' gaiety. Regret to record the death at Dindigul of our pioneer

planter, Monsieur E. deFondclair, of fever on the 25th instant, aged 65.

Mysore.

MUDIGIRI, 29th March.—Weather.—

Fine; ordinary hot weather conditions prevail. Night of 28th cloudy with lightning and distant thunder to the south-east. Hazy during daytime. No rain since 16th. *Crops*.—The spike is "burning" in open places; rain is badly wanted to swell the berries from the blossom that opened in February. Prices of grain fallen recently. *Plant-diseases*.—Nil. *General Health*.—Fair. Fever and bowel-complaints prevalent. *Labour*.—Ample for all requirements. *Interesting Items*.—A fine tiger was shot on the night of the 24th at the Kummercode village, on the borders of the Kummercode Estate, and some 50 yards from the Putail's house by means of spring guns set by the Putail over the carcass of a buffalo it had killed the previous evening. The measurements, taken before the animal was skinned are as follows: From top of tail to nose, 9 ft. 4 inches; height at shoulder, 3 ft. 7 inches. Death must have been instantaneous as two bullets entered its neck, one passing out above the shoulder. The animal was in perfect condition. From information gathered, the reward offered by the Mysore Government is from Rs. 15 to Rs. 40; the skin is then the property of Government and is sold by public auction.

GENERAL NOTES AND ARTICLES.

LIGHT RAILWAYS FOR PLANTING DISTRICTS.

THAT planting districts are in urgent need of better communication with the outside world is a truism only too patent to all concerned. Roads are good enough in their way, but even the best of them afford but indifferent and extremely costly facilities for carriage of supplies and produce. Where roads are already in existence, a cry is raised for railways.

The response to such appeals has not been encouraging. The mistake lay in the style of railway asked for. There are railways and railways, and in lightly populated districts with a meagre traffic, the construction of *pucca* broad or even metre gauge lines is a most serious matter. There are now four gauges in India,—the standard, the 5 ft. 6 in.; the metre, 3 ft. 3½ in.; and two special gauges, the 2 ft. 6 in. and 2 ft. The original gauge selected for India was the 5 ft. 6 in., but the enormous costliness of this gauge was speedily proved to be an insuperable bar to the extensions so urgently required. It was then that the metre gauge was introduced, with incontestable results in the way of dividend earning. Of the special gauges, one of the best known is that of the Barsi Light Railway, 2 ft. 6 in., which has irrefutably been proved to possess the greatest carrying capacity per cent. of cost of track of the three. It has sufficient stability to carry goods of very great weight and bulk, while the flexibility of its alignment is such that it can accommodate itself to countries of the most mountainous character, at a fraction of the cost of a standard gauge line negotiating similar difficulties.

The cost per mile of such light railways is, even under the usual circumstances, under £200 per mile; while if

full advantage were taken of the existing roads, and stations, level crossings, etc., avoided, as well they might, probably the initial outlay would not be much over that amount.

It is not difficult to understand what a huge difference this must make, if properly represented, to the prospect of opening up our planting districts by means of cheap transport. As already remarked, our estimated traffic is in cases barely sufficient to pay the minimum interest required in the initial cost of production of *pucca* standard or metre gauges. But it is, without perhaps a single exception, more than ample to provide a very respectable dividend on light railways as we are advocating.

The matter is one that deserves the closest attention of Indian planters, whether in South or Upper India. It is one that has been far too much neglected; we trust it will no longer remain so.

Science and planting.

Practically all planters are in favour of obtaining scientific assistance for their industry, but few are inclined to pay for it. This can be now seen in Upper India, a lot of big talent has been indulged in regarding the engagement of a scientific officer for the tea industry. Yet by the last committee minutes to hand of the Indian Tea Association, we find with no surprise but with great regret, that the scheme has been practically shelved. The argument seems to be that there is no sufficient outlet has been found for the produce, and that it costs money; there is no earthly use to spend more in planting planters how to increase their crops,—which is a plausible but not convincing argument.

"Creepers" in Ceylon.

It is almost impossible to take a Ceylon journal without finding mention of the arrival of one or more "creepers" chronicled, the import being so brisk that three or even more per steamer is nothing unusual. What becomes of them all is hard to tell, and we fear will be an impossibility to ascertain until the statistics are kept more accurately than at present. We only hear of the import, but assuredly the export in the form of "returned empties" must be of imposing dimensions. Accurate returns of the creeper export would, we venture to say, be of great interest to many parents and guardians who at present believe that a "creepership" in Ceylon or India for the matter of that, is an easy road to fortune.

Registration of the U. P. A.

In our last issue a correspondent desired to know whether the U. P. A. was a registered Association or not. We are pointing out the obvious necessity of such registration. We are glad to inform him that the matter was already under consideration of the Committee before his letter appeared. There can be no doubt that registration is desirable not merely for the protection of the Reserve Fund and the Trustees, but in order to facilitate action in respect to matters as the employment of Counsel to watch planter interests in actions at law. For instance, the reference under Act XIII. of 1859 that are now pending. We understand that the subject of registration is to be bro-

the next Annual Meeting, and that, prior to this, a definite scheme is to be formulated, including amendments of rules that would be rendered necessary.

Cinnamon. The demand for cinnamon is fully equal to the supply, and the tending prices is in an upward direction, says the *H. and C. Mail*. The quarterly sales last week there was a brisk competition, and nearly the whole of 1,250 bales and 43 parcels realised full rates current by private contract to an advance of $\frac{1}{2}$ d. per lb., especially for the commoner qualities. There was no material rise as compared with the prices published in November last. The general range of quotations was as follows: First quality cinnamon, low, at $7\frac{1}{2}$ d.; ordinary to good at $10\frac{1}{2}$ d. to 1s. 1d.; fine and superior garden growth at 1s. 3d. to 1s. 6d.; seconds, very inferior, at 7d. to 9d.; common to finest at 10d. to 1s. 2d.; fine plantation at 1s. 4d. to 1s. 5d.; thirds, coarse, at 8d.; middling to fine, $9\frac{1}{2}$ d. to 1s. 1d.; best mark at 1s. 3d.; fourths and fifths from $6\frac{1}{2}$ d. up to 1s.; extra fine, 1d., and a few broken (in boxes) at 9d. to 10d. per lb.

Antic robbery. £44,000,000 is the estimate, according to a question in the House of Commons, of the amount which the Indian people have been robbed by the Government in closing the mints. As planters, we should hope most officials know, silver ornaments and jewellery represent the savings of the people which were formerly always convertible into rupees when required. To appropriate £44,000,000 is a feat which is enough to drive mad with jealousy the most accomplished bank robbers the world has ever seen. What would happen in England if the Government were to decree that 25% of everybody's savings should be forfeited, may be better imagined than described. The Indian Government might easily find the five or six millions sterling for the famine, that would only be paying back about 2 annas in the pocket of the "swag" collared from the unfortunate inhabitants of India. The only benefit the Government has given in return for this gigantic robbery is the very obvious one of a bogus currency. That India is a poor country we are always being told, but that there is another country on the face of the globe that would tolerate such wholesale robbery by its officials for their own benefit we cannot even dream.

Ville. We regret to have to record the death of the famous agriculturalist, Georges Ville. He will long be remembered as one of the pioneers of scientific agriculture. His works on agriculture have attained a wide popularity and are unsurpassed for correctness of style. He also attained wide repute as an interesting and effective lecturer, and probably did more than anybody else to popularise scientific agriculture in European countries. He will probably be remembered as the first to maintain that plants derive a considerable part of their nitrogen from the atmosphere. This theory he strenuously upheld in the face of almost unanimous opposition from other agricultural chemists. He did not limit his theory to leguminosæ, however, nor did he indicate the means whereby the fixation of nitrogen is carried on. Subsequent discoveries have proved that he was correct as regards leguminosæ, and it is not impossible that future

science may discover that other natural orders have similar powers. He strongly advocated the ploughing in of green crops, which he recommended as a practically costless system of enriching the soil. That he should have been mistaken sometimes is only natural; but there is no doubt that the whole agricultural world is deeply indebted to him for his eminent services in the advancement of agricultural science.

Ceylon planters abroad. In a recent issue of a journal published at Colombo, calling itself the *Times of Ceylon*, we are again taken to task for commenting on the appointment of a Ceylon planter to manage a large Brazilian property. The excessive irascibility of our contemporary may probably be explained by the truth of our remarks on the principle of the greater the truth, the greater the libel. The absurd arrogance of the Ceylon paper may be well illustrated when it denies our right to comment on planting matters outside S. India, reserving that right apparently for itself. We suppose the *Times of Ceylon* means to be taken seriously instead of comically, but its contention is so utterly ludicrous that we decline to waste time in discussing it. The amusing exhibition of temper may probably explain the garbled account of what our correspondent wrote, and excuse his very clear remarks being twisted and tortured to bear a meaning entirely contrary to their legitimate interpretation. Our original remark that has so aroused the Colombo journal's ire was that we considered it strange that a Ceylon planter should have been selected to take charge of a Brazilian property, as in no country in the world has coffee been so utterly wiped out as in Ceylon. Let us hope that Brazil may have a more fortunate experience of the introduction of the Ceylon system than India has. There is not a single district in South India that cannot show its desolate memorials in the form of abandoned estates, the devastating handiwork of the Ceylon planter. We are glad to see from our contemporary that Ceylon coffee planters are in demand for planting coffee in many countries, if only from the assurance that the world's crops will not be thereby increased. But perhaps we may be excused expressing our surprise that the supply can keep up with the demand, when the combined efforts of all the Ceylon planters have only succeeded in producing an export of some 20,000 cwts. last year. Our original remarks we consider fully justified, and we can pardon our contemporary's childish exhibition of temper on the same grounds that the Chief Justice of Ceylon did in a late contempt of court case, the Editor of the Colombo journal being pardoned "as he didn't know better."

Artificial manures. Every year the already huge artificial manure bill of South Indian planters grows larger, and as better means of application get discovered, the increase is likely to be faster than ever. It is a sad but patent fact that the demand for such manures has far outstripped the intelligent appreciation of the system. The consequence of such ignorance involves an enormous waste of money in purchasing inferior stuff, when a really first-class article is readily obtainable at very much the same price per ton and infinitely cheaper in point of manurial value. This loss would be easily and greatly reduced if the community, as a whole, had acquired

any familiarity with the rudimentary principles of agricultural chemistry. Yet there is a section of representative and influential planters in every district who have moved with the times. And it is to these to whom we would appeal. It would not be overloading the agenda paper of the next U. P. A. meeting were a proposal brought forward that the provisions of the laws in England for the regulation of the sale of artificial fertilizers be brought into force in India. As we have remarked, the present methods of the trade are highly unsatisfactory. The sole value of such concentrated manures as poonacs and fish, lie in their nitrogenous and mineral constituents. Consequently the more pounds per ton contained of these constituents, the more valuable the manure. But fish to most planters is only fish, and poonac but poonac, and how one brand can be better than another passes their comprehension. If they must get it, they must, but there ceases their interest. To call such an attitude fatuous is to err on the side of politeness. The only possible excuse for their policy of indifference is their contention that the firms who sell the manure furnish analyses of their wares only if specially so required, and that these analyses may be true enough of the quality of the sample analysed, but by no means necessarily so of the particular consignment despatched. It is only natural that this last should be the case. If their customers are generally so indifferent as to the quality of the goods they purchase, what can it profit the suppliers to take any special care?

It may seem as if our arguments were mutually destructive, yet the effect of the measure we advocate would be beneficial to all parties. Were the manure firms obliged by law to guarantee the quality of the goods they offer for sale, business therein would be greatly stimulated, for the present minority of men "in the know" would certainly purchase a great deal more freely than at present, while the great majority of those so lamentably ignorant of the manures which the exigencies of modern planting compel them to use would be forced to spend a little more time in investigating the question. And with only one result.

KOLA NUTS AND THEIR CULTIVATION.

[By FRED. B. KILMER, CHEMIST, NEW BRUNSWICK, U. S. A.*]

THE following notes will be found of interest and should induce enterprising planters to give the kola plant a trial at least. The yield is stated to be 10,000 lbs. per acre. The market price of the nut is about 8d. per lb. Dividing the crop by ten and reducing the price by 25%, the gross yield is, at the present exchange, about Rs. 400 per acre. There is no machinery required whatever, neither curing nor pulping being necessary. It grows into a forest tree, needs no pruning and serves as a good shade for coffee. It begins bearing in about five years:—

Supply of the nut. The kola nuts, as found in the American market, come mainly from Africa. The bulk of the West India nuts are consumed by the inhabitants of the islands where grown; a very small part of the crop is shipped to Europe. Lately, small supplies have reached our market from this source. No accurate estimate of the extent of the world's supply, nor the possible yield for this drug, can be given. The official reports of the African trade give from 2,500,000 to 3,000,000 pounds per year, which is largely utilized for home consumption. Those

who are familiar with tropical products can realize the difficulties and peculiarities of the market in such a commodity. It is carried on mainly through native women. There is a certain amount gathered for home demand. The quantity that will reach the shipping ports must depend upon the caprice of the natives, and especially as to how much they stand in need of rum or tobacco. The nuts must all be carried, often hundreds of miles, in head-loads, through miasmatic forests, over impassable streams, across pathless mountains, under a tropical sun. The conditions are such that, to carry a ton of nuts and safely land them on a ship that plies along the sunny shores, is a task that one would shrink from after a survey of the field. The native gatherers are shrewd dealers, even if not skilled in the arts of civilized commerce. They know how to create supplies, to create a rise in price; and they also know that, where the European buyer wants the nuts badly, grades that have no value at home will find a ready market. This accounts, in part, for the variable nature of market specimens. In the West Indies the Government encourage the cultivation of the plant, and, for many years, ample supplies from this source will be obtainable. In our own country some attention and discussion has taken place looking towards its cultivation on our soil.

Soil and climate.

The kola plant seems to grow well in a climate where there is plenty of rainfall and a warm, tropical sun. Of course, the hotter and more moist the climate, the better. Wherever bananas, nutmegs or cocoa will grow it is safe to say this tree will thrive. The best kind of soil is a heavy loam which is deep, rich and clayey, although it will grow in a variety of soils. In some of the West India Islands it may be found as high as 5,000 feet above the sea-level, but the best specimens are generally found about 1,000 to 2,000 feet elevation. If the situation is low and damp, the ground must be well drained.

Nurseries.

The young plants may be obtained directly from the seed planted in the field where they are to grow; but the best results seem to come from planting seeds in nursery beds, transplanting them when plants are 1 to 2 to 3 feet in height. The seeds, as usually obtained from grocers, are packed for shipment in boxes covered with earth, and the boxes are wet with fresh water. Holes are bored in the boxes for ventilation. The nursery beds in which they are planted are made of loam, free from leaf mould and kept shaded. In nursery planting the seeds are put in the bamboo pots commonly used in the tropics, and planted from 9 to 12 inches apart. It takes three to five weeks before the sprouts appear above the ground.

Planting.

When ready for transplanting, they are planted at a distance of about 25 feet apart. If the soil into which they are transplanted is not rich, the best planter digs holes several feet deep—5 feet each way around—and fill in with topsoil. It is necessary for the young plant to have shade. Most intelligent planters, who have lately taken up the planting of kola, use the banana for the purpose. The banana is very rapid-growing. It shelters the young kola plant and makes a profitable crop while the kola is coming into bearing; kola, in turn, will begin to yield the time the banana has exhausted the soil. The bananas are planted 10, 11 or 12 feet apart, with the kola at every second banana in the direction of the line. Thus, a plot of 20 feet square is enclosed with banana trees with four kola plants at the corners, leaving the kola from 20 to 34 feet apart. In sheltered situations, as in a valley between hills that have a growth of woods, the bananas are omitted in the centre of the square, to give more light and air. A gradual thinning out of the banana is made as the kola acquires increased growth. Kola is usually planted at the beginning of the wet season.

Crops and cultivation.

Grown wild, it commences to yield fruit about the fifth or sixth year. Well-cultivated specimens often begin to bear considerably earlier. In the wild state they reach full bearing in the ninth or tenth year. When the kola tree attains full size, it is customarily planted with planters to place in the field with them small varieties of coffee or some vegetable plants such as peas or yams. Kola gives a good fertilizer. By this method a kola plantation costs nothing except for the first planting. Kola does not appear to exhaust the soil as does the coffee, banana, orange, etc. Upon once attaining growth it appears to be of permanent value. Specimens that have borne for fifty years and probably longer have been noted. Independent of its value for the nuts, kola is an excellent shade timber tree, and is utilized for this purpose. A conservative estimate

*Abstract by the author of a lecture delivered at the Pharmaceutical Meeting of the Philadelphia College of Pharmacy, January, 1896.

yield is 120 pounds of dried nuts, or over 250 pounds of green per tree, or from 8,000 to 10,000 pounds per acre. No such nuts, however, are gathered in any portion of the West India islands owing to the unsystematic and haphazard measures employed in harvesting the crop.

Taking up that part of the plant probably of the greatest interest, the seed or nut, we examine the pods, which we will find contain from two to three nuts, or seeds, so closely pressed together in growing as to be crowded into various shapes. The cellular tissue of the pod in drying is filled with a very slimy, stringy mucilage that is easily observed upon ripening. A singular fact noticed about the pods is the fact that red and white nuts are found side by side in the same pod. So far as my observation goes, pods may be found to contain all red or all white, but no trees give all white or all red seeds. The native users lay great stress upon the difference between the white and the red kola nuts. Symbolically, the white nuts mean peace, happiness, veneration, acquiescence to overtures. Red nuts mean the reverse: war, ill-will, challenge, rejection of overtures, etc. In some instances the white seeds command the higher price, being in repute as giving greater and better effects. The dried nuts found in our market it is difficult to distinguish between the white and red varieties. Oxidation during the drying of the seeds gives to both about the same yellow-brown colour. When subjected to the action of solvents, white or red nuts (dried) when put into water, alcohol, acetone or glacial acetic acid, shades of orange or yellow which are so nearly alike that considerable practice is necessary to distinguish between them. The colouring matter of red nuts is, however, very soluble in dilute mineral acids. The white and red varieties may be distinguished by macerating for twenty-four hours in dilute sulphuric or hydrochloric acid when it can be found that the acid extraction of the red kola is a beautiful rose, while that of the white seeds is of a light straw colour. Vogel has shown that if the acid extraction is made alkaline with soda, that from red nuts assumes a purplish violet; that from white an ochre-like colour.

Several observers have noted that the red nuts give a larger percentage of mixture; Heckel gives 46 per cent. for white, 56 per cent. for red. The same author claims that the white seeds contain 5 per cent. more caffeine, 7 per cent. more of the peculiar principle, kolanin, than the red. My own experiments tend to confirm the observation that there is an appreciable difference in the amount of glucoside found in the white seed as against that found in the red.—*Jamaica Bulletin*.

CARDAMOMS IN COORG.

The following article originally appeared in the *Indian* some months ago, pressure on our space forbidding its earlier appearance. It is, however, so full of interest that we have no hesitation in publishing it:—

The Cardamom cultivated in Coorg is the *Elettaria Cardamomum*, although the trade, so far as native-cured fruit is concerned, is usually falling, still the cardamom is an important article to the people and is certainly the cause of much thought and anxiety to the Administrators of this little Province.

We will not give any botanical description of the cardamom in this article, nor will I refer to the other kinds which are not utilised, but endeavour to give an idea of the habitat of the plant and the methods of curing it followed by the people, with a few remarks on the state of the cardamom trade.

The cardamom grows best on the Western and Northern slopes of the ghats at an elevation of from 3,000 to 5,000 feet above the sea. At the full burst of the monsoon strikes the steep sides of the hills and the rainfall reaches as much as 300 inches in some parts. It grows spontaneously, but is one of those peculiar plants the seed of which lies dormant till induced to germinate by the occurrence of favourable conditions. One of these is the admission of light. Cardamoms will only be found in the dense evergreen forest, and the ordinary method of inducing them to appear is to open a small space in the forest by felling one or two very large trees. Not only does this admit the light, but the fall of the trees shakes the ground and breaks the surface. So thoroughly is the necessity for the shaking of the ground believed in, that when a plot is selected, all undergrowth, small trees, &c., which might interfere with or break the fall

of the giant selected for destruction, are cleared away so that the tree may descend with all its weight and momentum: and to intensify the effect the tree is always felled so as to face downhill. As these plots are almost invariably situated on the steepest hills, the effect of the fall of one of the enormous trees so common in the Ghat Forests must be very grand.

A Cardamom Estate is called a "male," and the ordinary method of cultivating a "male" among the Coorgs is to open out a certain number of these plots within the limits of the same. The plots are necessarily small, for only a limited amount of light is required, and a plot too large, in addition to admitting too much light, would also allow of evaporation from the soil to an injurious extent. In the leases given for "males," the maximum size of each plot is fixed at one-sixth of an acre, and at least thirty feet of forest must be left between any two plots. As a rule not more than two trees are felled and oftener only one. The felling generally takes place in February or March in the year and by the rains the young plants shoot up. They require weeding at least once before they begin to yield, which takes place in the third year. The plant continues to bear for seven or eight years, the fourth and fifth and sixth of its age being its best. When it begins to cease bearing, either a new plot is selected or another tree is felled which seems to give a fresh start to the plant.

The position of these "males" is generally so remote and inaccessible that the picking of the crop is undoubtedly no easy task. In fact, the Coorgs lose a large proportion of the crop, for the fruit begins to ripen as early as July, while they never attempt to pick before well into September. The tremendous rainfall not only in itself deters them from penetrating the hills, but renders the numerous streams and torrents impassable. Indeed, on the exposed slopes of the Ghats, life would scarcely be livable in the height of the monsoon. As it is, the leeches in these forests throughout the autumn and cold weather months must be seen to be appreciated, and in addition to these drawbacks, the steepness of the hills is such that walking is difficult. When climbing about these "males," one can quite comprehend the feelings of a fly walking on the side of a house.

The cardamoms are picked and sun-dried. If the male is far from the village, the drying takes place on the spot, otherwise the capsules are taken home. Four days sunning is sufficient, care being taken that they do not get wet and that they are not over-exposed, as this latter would cause the capsules to burst. But beyond this open-air drying, no further curing takes place. The fruit stalks are rubbed or picked off. In this part of the process, it is wonderful the number of capsules a practised hand will clean in any given time. The capsules are then assorted according to size and colour and stored away till disposed of. But a better system of both cultivation and curing has been introduced into Coorg by an English planter in the ghats. I am much indebted to Mr. Finlayson for his having put at my disposal the necessary information concerning his treatment of cardamoms. In the first place the cardamom plant is raised from seed in a nursery and the plants are put out in a compact plantation instead of being allowed to grow spontaneously in scattered clearings. The first step is to prepare the area which is to be made into a cardamom plantation. This is done by thinning the shade. The amount of thinning can only be determined on the spot and is guided by experience. The aspect chosen is generally north or north-west, and the most favourable places are the moist hollows and ravines. The undergrowth is cleared, and planting is done in June and July, from nursery plants raised from seed, supplemented by bulbs from old stools. Mr. Finlayson prefers the latter as growing better. The plants are put out at 7 feet by 7 feet, not deep in the soil. The plants are put into shallow pits which have been filled with surface mould; the soil is pressed round the half exposed bulb and the plant tied to a stake.

These cardamoms yield a small crop the third year after being put out and they do not come into full bearing until the fifth year, thus there is no advantage in time in this method of cultivation. The yield then is about half a seer to each plant. Thus an acre would give about 475 seers, or say 950 pounds, under half a ton. The picking lasts from July to January, September and December being the busiest months. The first crop always yields the largest fruit.

Before proceeding to give Mr. Finlayson's method of curing, I will venture on a comparison of the advantages resulting from the two systems of cultivation, the native one by means of isolated and scattered openings in the forest, and the English one of a regular

plantation. As to the former, the only advantage that can be claimed—and I am not certain that the claim should be allowed—is that it does less harm to the forest which, as the Ghat Forests should be preserved for climatic reasons, is a very important point. Mr. Dickinson, whose knowledge of the conditions of cardamom cultivation owing to his personal inspection of the males and ghat forests is unique, is in favour of the native method on the ground of less damage being done to the forest. He argues that the partial clearing of the high forest over a comparatively large area, accompanied by the removal of the undergrowth, tends to set up scouring and that the soil will be all washed away. But the drawback to the native system is the difficulty of supervising the work and of enforcing the rules as to the size of the plots and the width of the belt of forest to be left between each plot, and though it is in the interest of the male holder not to open the forest to too great an extent, it is a question whether, with the low prices ruling in the cardamom market, the urgent necessity of raising a large crop will not, and does not, tempt male holders into over-felling, leaving the future to look after itself. Where a forest has been over-felled under the native system, the damage is practically irreparable. It is with very great diffidence that I differ from one so well up in the subject as Mr. Dickinson, but I have seen both systems of cultivation, and taking all the conditions obtaining, I am decidedly in favour of the English method of cultivation, as it is more easily and effectually supervised; it concentrates the damage done into a smaller area, the crop is more easily and more cheaply picked, and the whole working of the estate more in accordance with science.

Mr. Finlayson dries the capsules partly by exposure to the sun and partly by artificial heat. The former is the better method, but owing to the uncertainty of the weather, the latter, in the end, pays better. The cardamoms are bleached by exposing them to the dew for a couple of nights and then fumigating them with sulphur. Mr. Finlayson is naturally somewhat reticent as to the process his cardamoms pass through, for the supply is large and the market restricted and the competition from Ceylon, Travancore and Mysore is keen. Before picking, the capsules are carefully sorted and clipped. I am unable to give the cost of cultivating, picking and curing the cardamom under this system. It is finally packed in boxes and sent to the market.

The price of cardamoms has been steadily diminishing of late years, Rs. 14 to perhaps 'in a few instances' Rs. 18 per maund of 28 lbs. is the average selling price of native-cured cardamoms. The English cured sell from Rs. 1-8-0 to Rs. 2-4-0 per lb. The system in force in the days of the Coorg Rajas as regards the disposal of cardamoms was that the whole crop was handed in to the Government, who paid the cultivators a fixed price per maund and sold the crop for itself. The price paid was from Rs. 12 to Rs. 20 per maund. This was continued after the annexation of Coorg until 1846, when the males were put up to auction and they are now leased, tenders being invited for a certain period of years. There is another class of male in Coorg—the Jama male—the holders of which have a right to the produce on payment of rent, which is assessed on the estimated yield.

The prospects of the native cardamom cultivators are extremely gloomy. Owing to several causes, the cultivators have been having a bad time of it lately. Falling prices, the enfranchisement of their slaves which necessitates payment of labour, and bad seasons, have all combined to render it impossible for many of the lessees to pay the rent they covenanted to six years ago. So bad has been their condition that the Local Government has had to allow a large number to resign and the condition attached to the acceptance of the resignation, viz., the payment of all arrears, has been found difficult to enforce.

It is a matter of extreme regret that a comparatively large number of families should lose their principal means of livelihood, but it is useless for the State to endeavour to oppose the laws of economics. Want of capital prevents these small male holders from cultivating and curing their cardamoms in a paying way. The outturn is so poor in quality that it necessarily fetches a very low price when the beautifully cured capsule of the English grower is competing with it, and the problem will soon work itself out with this result, that the producers of native-cured cardamoms will become fewer and fewer, until the produce they put on the market only suffices for the demand. For, strange to say, despite its inferior value and condition, there is still a demand for this kind, and always will be, as long as there are people who, though desirous of purchasing, can only afford to pay low prices and must, therefore,

perforce put up with an inferior article. The slow extinction of the male holder is a serious loss to the Forest Revenue, but, I fear, go he must, and the Department must look around for some fresh source of revenue to make up the deficit.

G. H. FOSTER.

THE MANUFACTURE OF SALTPETRE.

LEXICOGRAPHERS define saltpetre as nitrate of potash (*potassa*), and potash as ashes from burnt vegetables; here, therefore, the ordinary reader has to stop and rest satisfied with the scanty information conveyed by his dictionary. It follows, therefore, that very little is known about saltpetre and its manufacture, except that, combined with charcoal and sulphur, it forms gunpowder, one of the necessities with all nations. It must, therefore, be an important article of commerce, and a description of its manufacture should prove of more than ordinary interest. It is simplicity itself, but the modes at present generally adopted are primitive to a degree; when such manufacture is more general, improved methods are sure to follow. In the North-West Provinces this manufacture is in the hands of a coterie of natives, and is conducted in outlying villages in an unsystematic manner, yet it pays handsomely.

To describe the manufacture of saltpetre as it is at present conducted: The first requirement is the soil in which the "fungus" containing saltpetre grows, and it simply abounds. An old village—the older the better—is selected, and by payment of a small annual revenue to the zemindar, a contractor may purchase the right of collecting saltpetre-surcharged soil. Old walls, huts, sheds, etc., give an abundant supply of this soil. Wherever damp has left its traces, there the "fungus" incubates and grows apace; wherever animal excreta are deposited it takes root, and in sandy lands, after the annual monsoons, it flourishes. It requires no skill to discover this soil, as it betrays itself both in appearance, which is that of a shining surface, and to the taste, being saline. All that is necessary is to scrape the surface of the soil, fill it into bags and convey it to a factory. It is here converted into saltpetre. To describe the process: This earth on receipt into a factory is submitted to a fire test to discover the amount of foreign matter it contains, such as pure earth and salt. This is important merely as a detail, for the earth is invariably purchased from contractors at prices varying to about annas six a maund (80lbs.) The work of manufacture commences with the filters, which are merely pits dug in the open, measuring about 6ft. long by 4ft. wide by 2ft. deep; the bed of the filter slopes towards a vat, and is covered with loose lime, ashes, clinkers or rubble, to aid filtration. These filters are filled with the earth and water plentifully poured over it: in about twelve hours the vat becomes filled with a ruby-coloured liquor, which contains the best part of the saltpetre and salt from the earth, but not all. This liquor is next conveyed into boilers and allowed to boil for a matter of twelve hours, during which time the greater portion of the salt contained in the liquor precipitates, and is carefully ladled out. This salt, no matter how small the quantity may be, is excisable, and consequently a saltpetre factory comes under the espionage of the Salt Department, the duty of Rs. 2-8 per maund being forced on to the saltpetre manufacturer, or the quantity of his output in salt is held. One of the larger factories recently had as large a quantity as five hundred maunds of salt stored in their godowns and could not dispose of it at even the ridiculous figure of one anna per maund plus the aforesaid duty. But the Salt Department were inexorable, and rather than abate their charge, destroyed the salt by throwing it into wells, running streams, etc. By the way, this salt should in itself become staple, as it is of the very best quality, and can be purchased by payment of the excise duty alone, almost. To return to the boiling liquor in the boilers. It is carefully siphoned off into a second vat and allowed to stand for an hour or so, to allow all dirt, etc., to settle to the bottom, when it is run out through troughs into cooling vats. Into these cooling vats are placed cages, made out of bamboos, divided into compartments. The liquor adheres to the bamboo branches and crystallizes. In about eight days time the liquor becomes completely crystallized into saltpetre.

In the meanwhile nothing has been lost. The earth in the filter pits, after the liquor has been drawn off in the first instance, is again filtered, and the second draw-off of liquor undergoes the same process as described above; when it is found that the liquor is becoming lighter in its colour, the earth itself is put into the boilers with the addition of water, and thoroughly mixed up and disintegrated.

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Fish Guano.—A Speciality. Specially prepared and manufactured from Fresh Fish in new patent machinery and under a new process.

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Coir Matting of every description, from the finest quality Twill to common Estate Shade Matting. Prices from Rs. 15 to Rs. 1-8 per roll of 60 ft. by 3 ft.

Quotations and further particulars will be furnished by our Tellicherry and Mangalore Agents for delivery at their ports, and by the undersigned.

D. N. MORISON,
MANAGER, KALLAI WORKS.

"Englishman," August 1st, 1896.

APPRECIATION OF AN INDIAN MIXTURE.

Messrs. CHILD & CO.,

The Wholesale Tobacconists of Chowringhee, are in possession of an autograph letter from Mark Twain.

"Indian Daily News," August 1st, 1896.

Mark Twain left a substantial memento of his visit behind him in Calcutta in the shape of a letter addressed to Messrs. Child & Co., and an old Mississippi pilot knows what good tobacco is, even when he takes to literature.

MARK TWAIN.

Calcutta, February 8th, 1896.

MESSRS. CHILD & CO.

SIRS,—This is the brand I wanted. I have smoked your Honey Dew Mixed in another part of the world, and learned to prefer it.

Truly yours,
S. L. CLEMENS.

CHILD & CO.'S HONEY DEW MIXTURE

Is prepared from the four finest growths in the world, viz:—

Sun-dried Virginia (sweet and mellow), Old Kentucky (full flavoured), Turkey Dubec (mild), Latakia (fragrant). All finely matured in bond, and judiciously blended.

It is a faultless Pipe Tobacco, being of medium strength,

WITH DELICIOUS FLAVOUR.

THE FINEST THAT CAN BE MADE. NO EQUAL.

In $\frac{1}{2}$ lb. air-tight tins, Rs. 2-8 per lb.

CHILD & CO.,

WHOLESALE AND RETAIL TOBACCONISTS,

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GENERAL PRICE LIST ON APPLICATION.

PER-PHOSPHODINE, A SAFE, PROMPT AND RELIABLE PHOSPHORIC REMEDY

FOR

NEURALGIA, Nervousness, Lassitude, Overworked Brain, Nervous and General Debility, Failure of Memory, Dimness of Sight, Depression of Spirits, Impoverished Blood, Liver Complaints, &c.

This is a stable and reliable solution of Free Phosphorus (Unoxidised Phosphorus) combined with Iron, Quinine and Strychnine. It is thus a valuable and highly efficient combination of nerve tonics, and will be found admirably adapted to the treatment of all ailments which have their origin in nervous exhaustion.

It will also be found very useful in convalescence from fever and other debilitating diseases.

CERTIFICATE. "I honestly believe the Per-Phosphodine, sold by E. PLOMER & Co., to be about the best patent medicine offered to the Indian Public."

Rs. 4 per Bottle, packing charge annas 4, extra.

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FOR SALE

Rudge-Wedge, Quinton and Wincycles, from Rs. 185.

Ladies' Cycles cheapest in India.

Spare Gear, Lamps, Bells, &c., always stocked.

Repairs, prompt and in competition with any house.

Send for Catalogues.

R. HENDRY & CO.,

THE CITY CYCLE WORKS,

34 Dhurruamtollah Street,

CALCUTTA.

rated. After a sufficiency of boiling, the liquor is siphoned, and as before run into cooling vats. It may now be assumed that the original earth is discarded. By no means; it is thrown out into beds. This earth is most valuable, since it only needs a few months exposure, and a shower or two of rain to render it as rich as—richer in fact than—before. It is really worth its weight in gold, for after each successive course of boiling it generates less foreign matter and more saltpetre. From the cooling vats, the crystallized saltpetre is stored in dry godowns and should become business for the broker. The one item of expense in the manufacture of saltpetre is the cost of firewood; coal is out of the question, for though preferable in every way and cheap in price, the freight charged over Indian railways prohibits its use.

There are only three or four saltpetre factories in the North-West Provinces, when there might be three or four hundred. The reason for this is that its value is not only under-rated, but the secret of its manufacture is known to a coterie alone. There is practically no outlay in money necessary in opening out a saltpetre factory—a square formed by four mud walls, a few dry godowns, three or four boilers, cooling vats and a trough, and you have your factory. The labour is cheap, since it is not necessary to employ skilled workmen. It is altogether so simple that the mystery is why Europeans have not discovered the industry and worked it. Reference has only been made in this article to the North-West Provinces as a field for the manufacture of saltpetre on a scale larger than that obtaining, but there are other tracts of country in which the yield must be greater, owing to conditions of soil, etc. These are Bikaneer and Bahawalpur, in which saltpetre is the very breath of their nostrils. Who has ever heard of the desert without hearing tales in connection with the mirage. And what is a mirage? Defined in a dictionary it is “an atmospheric optical illusion,” but what causes the illusion? Nothing more or less than the saltpetre caked on the surface of the sand, after a shower of rain, or after heavy dew. Why it is that more speculation is not rife is, that the Salt Department claim every particle of salt, and as saltpetre cannot be manufactured without a certain percentage of salt being generated, the surreptitious manufacturer becomes liable to duty and prosecution by the revenue courts.

In a maund of saltpetre the following are, as nearly as possible, the proportions of parts:—

50	per cent.	saltpetre.
15	”	salt.
35	”	earth.

—“*NOMAD in Capital.*”

LETTERS TO THE EDITOR.

COFFEE IN NATAL.

SIR,—May I hope that some of your readers, through experienced planters like Mr. B. Nelson, will give me their advice on the subject of growing coffee in Natal.

Up to the present it has been a total failure. Why, I cannot quite make out. The elevation is only a few hundred feet above sea-level. The climate is hot enough certainly for coffee, as all tropical fruits attain a wonderful degree of perfection. The rainfall is 40 inches only. Tea, as perhaps most of your readers know, grows luxuriantly, though the quality is not all that it might be. I am only starting in a very small way, as besides the question of capital, the risks seem rather great, and I am moreover a thorough believer in small areas and “intense” cultivation. I am only trying $12\frac{1}{2}$ acres to begin with. The land is fairly good soil, free gravel subsoil, sloping down on all sides save one. To supplement the rainfall I intend digging tanks or wells.

The land is now planted up with pineapples and bananas (plantains). I shall nursery at once coffee of two or three varieties, but *no* Liberian; of shade also a mixture, “thornless dadaps” (thanks Mr. Editor) predominating. The first coffee planting will be (in baskets) prepared with this new patent preparation “Jadoo,” and 4 (four) feet apart; shade 12 (to be thinned out to 24) feet. The pines will be left as a catchcrop. The bananas all taken out. The second year the pines sur-

rounding the coffee and shade plants will be taken out, leaving still a pretty catchcrop. The third year the pines would all come out. There would be a small crop of coffee. The fourth year or fifth dependent on the growth of the coffee I would take out every alternate coffee tree. If by the maiden crop the coffee had made a good growth, I would thin it then. Irrigate three or four times in the year, if possible; manure with clover crops, dug in, bone and hair from a tannery in the next colony.

NATAL COLONIST.

P.S.—Labour (coloured) is here one shilling per day or £18 per annum. In a recent interview with one of the first coffee planters of the colony, I find that shade has never been even thought of.

N. C.

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma contains per ton:—

61-50	lbs.	Nitrogen.
57-38	”	Potash.
14-92	”	Lime.
13-68	”	Phosphoric acid.

Orders booked for the coming crop of seed from the parent trees of above analysis at Rs. 3 per 1,000.

Manager, ARIENKOW ESTATE,
SHENCOTTAH,
Tinnevely.

OLD MYSORE COFFEE.

BY A VETERAN PLANTER.

I regret that owing to absence from home and other causes, I did not see your valuable publication for some time. It is however very gratifying to me to observe by your No. 33, that the subject of old coffee estates in Mysore still attracts attention, and that a correspondent, assuming the ominous name of *Chicory*!—that bane to the coffee industry, has written somewhat largely on the subject, and as I differ with your correspondent's sweeping statements, I am induced to shed a few more drops of ink on the subject, and in defence of the very fine species of coffee grown for years and that is still grown so largely in the Province of Mysore. It would be of some interest to planters if *Chicory* would be so good as to inform us why he calls the species of coffee so extensively and profitably cultivated on the old estates of Mysore “Chick.” I have always known it as *C. Arabica*. I have sometimes heard of Coorg “Chicks”—but rarely when compared with its common application to coffee grown in Mysore. Mr. Wright of Wynaad also alludes to the “chick” plant. He states at page 17 of the same number of *P. O.* that there are two varieties of coffee plants in Wynaad: “One is called Chick; these are plants whose primary branches grow rather perpendicularly.” While Mr. Wright describes the plant he calls “Chick,” he in no way connects it with the old Mysore Coffee. *Chicory* however makes no attempt to describe the plant he calls “Chick,” it is therefore impossible to say whether it is of the same variety of the Wynaad plant mentioned by Mr. Wright. I cannot however be made to believe that the plant called the “Chick” is really the coffee of the old Mysore Estates, if it was Mr. Wright writing specially about coffee would not have overlooked so important a fact when alluding to the “Chick,” which he describes as a variety—but which, if *Chicory* is correct, would be a distinct species of coffee confined to Mysore, for he rushes off with the following sweeping statement that “Everyone knows, who knows anything of the district of Mysore, that the old ‘Chick’ which was the local plant of these districts, has been virtually aban-

done, and that both old and new estates have been planted up with Coorgs," and "If the Mysore Coffee Co.'s places and Cannon's still grow the old 'Chick,' they are conspicuous by being exceptions;" and further states that "Some 15 or 16 years ago the 'Chick' plant began seriously to fail in its bearing power."

These pointed allusions to a species of coffee named "Chick" naturally leads to the belief that besides the *C. Arabica*, the original species that was introduced into Mysore, another species had subsequently found its way into the province, and in course of time exterminated the Arabian coffee, for according to *Chicory* the local coffee plant of Mysore, is the "old Chick." The local coffee was very extensively cultivated and was of only one species therefore that species must be *Chicory's* "Chick." It would be very interesting to many if *Chicory*, who seems to be in the know, would inform us how and when the "Chick" found its way into Mysore whether it is a distinct species, and why called "Chick"? (Could it be possible that its name is derived from that abominable article so commonly used in England and the Cantonment in spoiling the flavour of good coffee by its adulteration with it? What a connection!) To return to this "Chick" coffee. Is it a distinct species? It ought to be if *Chicory* is correct that the vast extent of coffee locally grown in Mysore is the "Chick," and it would also be a new species unknown to botanists. Dr. Cleghorn, a Mysore botanist, makes no allusion to this species of coffee in any of his books, nor does the genus "Chick" appear among the names of the several varieties of coffee mentioned in the "Flora of British India." Neither does Sir Joseph Hooker make mention of the "Chick" among the many species of coffee known to him. In connection with the genus coffee, it would be interesting to be told by *Chicory* of what species the Coorg plant is, which according to him has virtually driven the poor "old Chick" out of Mysore, as the young "Chick" (the "Chick" must have been young before it became old) in its time drove the original Arabian species out of the province.

Honor to whom honor is due! to some one will be due the honor of having discovered a new species of coffee grown in Mysore called the "Chick." I shall however state what I know of the locally grown Mysore coffee and of its ancient pedigree, gathered from well-established facts. On the Eastern side of the Bababooden Hills, a lofty range situate in the Mysore Province, is to be found the historical spot where about 250 or 300 years ago the first coffee seeds were sown in India. The seed was of the *C. Arabica* species brought direct from Arabia by a Fakir who came on pilgrimage to a sacred shrine situate on those hills, and which to this day is held in great veneration by both Mahomedans and Hindus. From that cradle of the Arabian coffee, not only was the whole of Mysore, but also Coorg, Wynaad, Ceylon, and other parts of India supplied with seeds, and plants, and some fifty years ago I myself sent both seed and plants to Wynaad and Coorg. At that time there was perhaps no other place in India where such fine and venerable old coffee trees were to be seen as in the Mysore province. Many of the native gardens were much over a hundred years' old, in which may be seen coffee trees with stems from 10 to 12 inches in diameter. Therefore, knowing what I know, I have no hesitation in stating that the coffee grown at the present time in Mysore, Wynaad, Coorg, and in other parts of India is of one species propagated from one parent stock, *C. Arabica*, out of the original nursery formed on the Bababooden hills, and for over half a century I have only known the fine old coffee so extensively grown in Mysore to be no other than the Arabian coffee and that no other species of coffee was introduced into the province either to my knowledge or that of the old native planters. I however trust that *Chicory*, who perhaps knows, will tell us how and when the "Chick" slipped in and took the place of the Arabian plant.

To return to the subject of old coffee estates in Mysore. I may safely state that every one of them, both European and native estates, were originally planted out with the Arabian coffee, propagated from the original stock of the species brought from Arabia, and that the majority of native planters to the present day continue to use plants raised from the good old stock. The one mistake, and it was a fatal one, made alike by European and native planters was to raise plants from seed produced on their own estates, instead of procuring or exchanging seed with some distant planter in the districts. The greater the distance between the estates, the more vigorous and healthy would the plants have been for planting out or for supplying vacancies. If this well-known agricultural practice had been followed by planters in propagating coffee from seed, there perhaps would have been no occasion for *Chicory* calling his Satanic Majesty in evidence to prove the natural failure of Mr. Jupp's local seedlings.

Notwithstanding my long residence in the province I have no pretensions for knowing any more than other planters in the district of Mysore, but from what I do know, I am fully persuaded that *Chicory* labours under some grave error when he asserts in his offhanded way that everyone who knows the district of Mysore knows that the "Chick," the local plant of the district, had been virtually abandoned, and that both old and new estates have been planted up with Coorgs, and that all green estates were replanted with Coorgs, and any estates that still grew the old "Chicks" were exceptions. I who know something of the Mysore district know nothing of the total abandonment of the old estates, nor of the other matters mentioned by *Chicory*, and my opinion is that the exceptions alluded to is just the other way. I would sooner believe that Tom Cannon had risen from his grave and shook his fist at the man who proposed to abandon his old estates than of their abandonment. If all Green's estates were abandoned and replanted with Coorgs, it must have been since 1875-76. For about that time I visited "Hoolully," his oldest estate, and only saw the fine old Arabian coffee then about 35 years' old and was neither told of nor asked to see any Coorg plants. What may have since then been done to that estate I know not.

But admitting that all Green's places, and his were the oldest European estates in the Munzerabad district, were abandoned and replanted with Coorgs, what of that? It would not constitute the abandonment and replanting of some thousands of acres of the old estates, of both European and native, with Coorgs. Knowing what I know, I am certain that no such abandonment of old estates ever took place for the purpose of replanting with Coorg plants. New clearings, vacant places in old estates, and vacancies may have been planted up with plants raised from Coorg seed, but that would only be a drop in the bucket compared with the vast extent of land that was 16 years ago under cultivation of the fine old Arabian coffee of Mysore. That is the time *Chicory* states, that the old estates of Mysore were abandoned, that would take us to about the year 1880-81. I happen to have the coffee planting statistics of the Kudu district for that year, which I give below for the benefit of *Chicory*.

Coffee holdings by Europeans ...	No. 181	—	estd. Acreage 18,51
Do. " Natives ...	13,660	do.	76,88
Do. (Inam) " do. ...	5,152	do.	30,03

Total Acreage 125,44

The only other coffee district in Mysore is the Hassan or Munzerabad district, for which an average of 100,000 acres may be taken as follows:—

European holdings	acres 25,000
Native do. "	75,000 100,00

Total for the whole of Mysore, Acres 225,44

The above figures show that in 1880—about the time *Chicory* states that the whole of the old Mysore estates were abandoned and replanted with Coorg plants—that European planters held about 45,000 acres and native planters about 185,000 acres of coffee in Mysore. Could, or would any sane person with these figures before them, and having a knowledge of them, accept *Chicory's* random statement of abandonment? If any abandonment of old estates did really take place among European planters, it may have been a few hundred acres of very bad coffee, not worth the cost of cultivation, and from my fifty years' experience of the native planters I may safely say that they are not imbued with anything approaching sentimentality; hence none of them would, for the sake of sentiment, abandon one single bearing coffee tree of those 185,000 acres held by them, be the tree ever so ill-shaped or of uncouth appearance. No, the native planter is the most unlikely person to sacrifice the tree giving him some return for the purpose of replanting it with *the handsome little tree with clean straight stems, etc.*, from Coorg, and then sit admiring it, until it yielded the much longed for coppers. A native does not look for a handsome wife, but for a hard working one, and on the same principle the native planter does not look for a handsome coffee tree, but sticks to a good bearing one! There is perhaps not even one among a hundred native planters who cares for a handsome coffee tree, and when that one is found, he would be worthy of as much admiration as *Chicory's* ideal Coorg plant.

I may further state, that so far from the old Mysore estates being totally abandoned and re-planted with Coorg plants, that at the present time there exists, in the Mysore district, acres and acres of the fine original Arabian coffee on the old estates, owned by both European and native planters. The coffee in these old estates is cultivated under shade of the original forest, I am afraid to say how old the native coffee is, but know some to be over a hundred years. Cannon's "Mylemoney" estate, the first and oldest owned by a European, was for years known as the "Annur" estate before it came into Cannon's possession. It was originally planted for a Mr. Jolly (of the firm of Parry and Co.,) who was the first European planter of Mysore, and was planted in the old native fashion so graphically described by your correspondent "Gas Bag" in No. 2 of Vol. II. This estate is fully 80 years' old. *Chicory* may write ever so disparagingly of the old local coffee plants of Mysore; he may call them "Chicks" or by any other name he likes—(with the exception of the disagreeable thing they spoil coffee with at home.) Yet the fact remains that this old estate, planted in the most primitive style, is still to the front, and produces—if I may venture to say it—the finest coffee in the world. And I hope I am divulging no secrets when I mention that a grocer at home, who deals largely in ground coffee, told me that Cannon's coffee is much used for flavouring Coorg and other description of East Indian coffee. So much for the credit of the badly-shaped ill-conditioned old local plants of Mysore. I would recommend *Chicory* to make a note of the grocer's interesting remark.

This old estate being the first owned by a European in Mysore, induces me to give a short account of its past career, which may be of interest to some of your readers. In those early days of the coffee enterprise, when such a thing as a coffee-pulper was unheard of, the berries, both ripe and green, were picked together, dried in the cherry, and then pounded out to free the bean from the covering skin of the dry fruit; this done, the enterprising planter sent his coffee down to the Western Coast, where it was carefully packed in bags made of the palm-leaf and shipped to the Red Sea, from whence it found its way to the various European Markets as Mocha coffee. After a time the "Annur" estates passed into the hands of Messrs. Binny and Co., and Mr. Norman Morison, who undertook management of the estates, but when once from home his bungalow with all in it was spitefully burnt

down by, it was supposed, Jolly's old servants, because they were not retained in service by Mr. Morison; owing to this ill-feeling towards him he returned to Madras, and I was sent to take charge of the estates. Soon after I took charge the first mutilation of the coffee tree in Mysore took place; I reduced the trees which were 12 feet high to 6 and 7 feet, and this one operation was in those primitive times called coffee-pruning. There was then only two other European planters in the Mysore district, Green and Cannon, both my seniors by two or three years, and both followed my example. In a few months the mutilated trees looked splendid, being covered with suckers from the root upwards and with new wood in abundance; the seniors were delighted and thought the last arrival a heaven-born planter—save the mark!—the last arrival knew as much about coffee at that time as a recent last arrival on an estate, who expressed his surprise to find that coffee did not grow in pods like beans. Such, however, was coffee cultivation in those early days of the enterprise. Shortly after, and not unlikely the grand results of the mutilation led to it. Mr. Morison became sole proprietor of the "Annur" estates, and as I commenced planting for myself, the management passed into other hands,—and finally into that of one of his sons. And about 1855-56, the estates were sold to Colonel Onslow, a retiring officer of the Mysore Commission; he went into partnership with Cannon, who at that time owned the "Basgode" estate. After the amalgamation of interests, the bulk of the property being situate near Mylemoney, Cannon resided there, and since then the old "Annur" estates were called Cannon's "Mylemoney" estates, and he now lies buried not far from them. This is the history of the oldest European estate in Mysore, and for all I know, will long remain in possession of the present proprietors, watched over by the shade of poor old Cannon. The "Basgode" estate is about 57 or 60 years' old. Green's estates are also about 60 years' old, and the "Arabudu coal" estate about 50 years' old. The Mysore Coffee Co.'s estates and Cannon's "Bahlur" estate are about the same age, 45 years. All these estates were planted under shade of the original forest, and have not been replanted. There are hundreds of other European estates in Mysore, but those mentioned above I believe to be the oldest in the district.

Your correspondent "Gas Bag" may turn some of his illuminating power on to the subject of old Mysore estates; he appears to know something of olden times and threw some light upon one matter, in his letter alluded to above, which I thought remained in the dark gloom of the past and only known to me; he may lighten the darkness that some of us still labour under. His remarks about the M. C. Co.'s estates is quite correct in every way; those estates in respect of aspect, soil, and forest are as good as any in Mysore, but are starved for want of funds. I do not know to what period "Gas Bag" alludes when he says they were "not looking well;" the last I saw of those estates was in 1876-77, they were then in first-rate condition.

With regard to "shade grown on estates originally grown in the open" in Mysore, I may mention that portions of Anderson's "Barguie" estate, and portions of Elliot's "Butchenhulla" estate were so treated. Middleton's "Candumonay" was also cleared "bang in the open" and fired, but whether shade was run up afterwards I am unable to say.

To return to *Chicory's* assertion that about 16 years ago all the old estates in the Mysore district were virtually abandoned and replanted with Coorg. I trust I have succeeded in showing that such was not the case. I ask what occasion was there for it? Could *Chicory* give any valid reason why either the European or native coffee planter should have abandoned, I won't say their 225,000 acres, but a single acre of their old estates, knowing as they do that no finer coffee than the produce of their old estates finds its way into the London

Market from any other part of the world. The Coorg plant may be finer, I will even say is very fine to look at, but it does not produce coffee equal to the local Mysore plant which, when properly cultivated, is equally as *handsome* as *Chicory's* ideal Coorg plant, and knowing what I know, I could tell him that long before Coorg was a recognised coffee district, some of the old Mysore estates grew as fine coffee bushes as are grown in Coorg at the present time, and on some of these old estates may still be seen very fine bushes of the original Mysore plant.

I do not know who first introduced Coorg seed into Mysore, probably Mr. Jupp did, and quite right he was in bringing in seed produced some distance from his estate; but whether the seed was from Coorg, or had been brought from some distant locality of the Mysore Coffee district, the result in my opinion would have been the same as regards his success with plants, with this difference, that the produce from the Mysore plant would be finer in quality. I do not admit that the Coorg coffee plant is of a different or better species to the Mysore local plant, both were propagated from the same pedigree, *C. Arabica*. The marked difference observed in the Coorg plant is attributable to natural causes, to the different systems of culture pursued in the two districts—that in Coorg entirely in the open, that in Mysore under shade of more or less density. These different modes of cultivation has naturally not only effected a change in the appearance of the plant, but also very materially the quality of the produce. Coffee was originally introduced into Coorg from Mysore; the seed was taken from shade grown estates to be propagated and cultivated in the open, the natural result being the growth of a hardy and fine looking plant, producing an inferior quality of coffee. While the plant improved under the open system of cultivation, the produce deteriorated in quality. This is common to all coffee grown in the open, a robust tree with inferior produce. Ceylon in its most palmy days, with its magnificently cultivated estates, was unable to compete with Mysore plantation coffee in the London Market.

While I strongly recommend that seed for all planting operations, whether for a new clearing or for replanting, or for supplying vacancies, should be brought from some distance to the place it is required for, I would at the same time suggest, that if the seed be required for shade planting to get it from a shade planted district, the further removed the better, and let it be from a well-cultivated estate of the old Mysore plant. I say this without prejudice to the Coorg seed which from the care taken with its selection and preparation there could be none better; and although the plants thrive and grow well under shade, there is nevertheless one serious drawback to it, and that is the produce from the Coorg plant though grown under shade is inferior in quality to Mysore. It is not generally known that the produce of Coorg plants cultivated in the ordinary way under shade, when sent home as Mysore coffee was classed by coffee brokers of Mincing lane as "*Coorg Mysore*," and in consequence of less value. A planter who was a great authority in coffee matters, and well acquainted with both the Coorg and Mysore districts, knowing of this classification of the Mincing lane brokers when he was about opening an estate in Mysore for himself, in preference to Coorg seed, procured the seed he required through me from the M. C. Co.'s Kelagoor estate, telling me that the Kelagoor plants were equal to any he had seen in Coorg; his venture turned out so very satisfactory that he applied to me for more seeds. He was of opinion that it would take some years before the produce of the shade grown Coorg plant would be equal to that of Mysore in quality. There are telling facts which should be noted by planters for future comparison.

In conclusion I would recommend any planter, who may have a few acres of the original local coffee of Mysore, in some distant corner of the district, to turn his crop into the prepara-

tion of seed to meet the demand for Mysore. The only seed now procurable is that prepared in Coorg, which, though good, I consider has its drawback. The appellation of "*Chick*," applied to the old local coffee plant of Mysore, is only a "*bogus*," got up for the amusement of baby planters, or of heaven-born planters, as the writer once was; do not let that deter any enterprising European or native planter from the preparation of seed from good selected genuine original Mysore coffee.

FRED. D. MEPPEN.

THE MANAGEMENT OF SOILS UNDER COFFEE, &c., IN THE MADRAS PRESIDENCY: A PRIZE ESSAY.

By THOMAS CLARKE, ESQ., TENCASY, TINNEVELLY.

II.

(Concluded from our last.)

Tips from the vine. In connection with this subject of prevention of waste, the following quotation from Baron Liebig's work upon chemistry in its application to agriculture and physiology is interesting, and very strongly supports the opinion above expressed as to the importance of saving the fallen leaves:—
"The observations contained in the following pages should be extensively known, because they furnish a remarkable proof of the principles which have been stated in the preceding part of the work, both as to the manner in which manure acts and on the origin of the carbon and nitrogen of plants.

"They prove that a vineyard may be retained in fertility without the application of animal matters when the leaves and branches of vines are cut into small pieces and used as manure.

"According to the first of the following statements, both of which merit complete confidence, the perfect fruitfulness of a vineyard has been maintained in this manner for eight years. Now during this long period no carbon was conveyed to the soil, for that contained in the pruned branches was the produce of the soil itself, so that the vines were placed exactly in the same condition as trees in a forest which receive no manure. Under ordinary circumstances, a manure containing potash must be used; otherwise the fertility of the soil will decrease. This is done in all wine countries, so that potash, to a very considerable amount, must be extracted from the soil.

"When, however, the method of manuring now to be described is adopted, the quantity of alkalies exported in the wine does not exceed that which the progressive disintegration of the soil every year renders capable of being absorbed by the plants.

"On the Rhine one litre of wine (about $1\frac{1}{2}$ pints English) is calculated as the yearly produce of one metre of land (about $10\frac{1}{2}$ feet English). Now, if we suppose that the wine is three-fourths saturated with cream of tartar (tartrate of potash), a proportion much above the truth; then we remove from every square metre of land with the wine only about 28 grains of potash.

"One vine stock on an average grows on every square metre of land, and 1,000 parts of pruned branches contain 56 to 60 parts of carbonate, or 38 to 40 parts of pure potash, and 45 grammes (about $1\frac{1}{2}$ ounces English) contain as much potash as one litre of wine. But from ten to twenty times this quantity of branches is yearly taken from the above extent of surface."

ON THE MANURING OF SOILS IN VINEYARDS.

"In reference to an article in your paper, No. 7, 1838, and No. 29, 1839, I cannot lose the opportunity of again calling the public attention to the fact that nothing more is necessary for the manure of a vineyard than the branches which they cut from the vines themselves.

"My vineyard has been manured in this way for eight years without receiving any other kind of manure, and yet more beautiful and richly laden vines could scarcely be pointed out. I formerly followed the method usually practised in this district, and was obliged in consequence to purchase manure to a great amount. This is now entirely saved, and my land is now in excellent condition.

"When I see the fatiguing labour used in manuring vineyards, horses and men toiling up the mountains with unnecessary materials, I feel inclined to say to all, 'come to my vineyard and see how a

bountiful Creator has provided that vines shall manure themselves like the trees in a forest, and even better than they.' The foliage falls from trees in a forest only when they are withered, and they lie for years before they decay; but the branches are pruned from a vine in the end of July, or beginning of August, whilst still fresh and moist. If they are then cut in small pieces and mixed with the earth, they undergo putrefaction so completely that, as I have learned by experience, at the end of four weeks not the smallest trace of them can be found."

The following notices of the same fact are from another vine grower:—

"The best manures for vines are branches pruned from the vines themselves, cut into pieces, and immediately mixed with the soil.

"These branches were used for manure long since in the Bergstand. Mr. Frauenfelder says: 'I remember that twenty years ago a man called Peter Maller had a vineyard, which he manured with the branches pruned from the vines. His way of applying them was to hoe them into the soil after having cut them into small pieces. His vineyards were always in a thriving condition, so much so, indeed, that the peasants here speak of it to this day, wondering that old Maller had so good a vineyard and yet used no manure.'"

Lastly, Wilhelm Ruf, of Schriesheim, writes:—

"For the last ten years I have been unable to place dung on my vineyard because I am poor and can buy none. But I was very unwilling to allow my vines to decay, as they are my only source of support in my old age, and I often walked very anxiously among them without knowing what I should do. At last my necessities became greater, which made me more attentive, so that I remarked that the grass was longer on some spots, where the branches of the vines fell, than on those on which there was none. So I thought upon the matter and then said to myself, 'If these branches can make the grass large, strong, and green, they must also be able to make my plants grow better and become strong and green.' I dug, therefore, my vineyard as deep as if I would put dung in it, and cut the branches in pieces, placing them in the holes and covering them with earth. In a year I had the very great satisfaction to see my barren vineyard become quite beautiful. This plan I continued every year, and now my vines grow splendidly and remain the whole of the summer green, even in the greatest heat. All my neighbours wonder very much how my vineyard is so rich and that I obtain so many grapes from it, and yet they all know that I have put no dung upon it for ten years."

Weeds. I have hitherto omitted all notice of weeds as a cause of waste, both because their amount is so various on different estates, and because on a clearing kept scrupulously clean from the first the quantity of material removed by them will not be great. The opinions of practical men as to the proper treatment of weeds vary almost as much as their amount; still, I believe, a large majority of planters would agree as to the wisdom of keeping land clean from the first, and I have no hesitation in saying it is a measure of economy second only to draining. The arguments used in favour of weeds, that they keep the soil together and protect it from the direct rays of the sun, may hold good as between two weedy estates, but as between a weedy and a clean one, a computation of the cost at which the benefits are purchased would at once turn the scale against them. On land which is already full of weeds the best method of treating them is not so obvious. In the case of rich free land where the coffee trees are large, possibly cutting down the weeds occasionally and forking them into the ground may be the most economical as well as the cheapest plan, and perhaps the soil will thereby grow richer; but on poor soils the coffee trees soon get choked out by weeds thus treated, and there seems no choice but to keep the ground as clean as possible by careful monthly weedings. If great loss of valuable material is to be avoided, they must be returned to the soil somehow, and probably burning and applying the ashes is the safest way, though at the expense of the nitrogen they contain. If some other cheap method were known of destroying the vitality of the seeds (as may be done at considerable cost by sulphate of ammonia), no doubt that would be preferable, but I do not know of any. A very interesting experiment would be the method recommended by M. Vîlè for supplying the soil with nitrogen, viz., to sow the ground with some leguminous plant which absorbs nitrogen largely from the air and does not grow to any height, and fork it into the ground before it comes to maturity. The weeds would thus be kept down, and at the same time the soil would be enriched.

To retain fertility. We now pass on to consider the restoration to the soil of the constituents carried off in crop. If we have succeeded in overcoming the large loss by waste, the drain caused by crop will be comparatively slight, and we have seen in the somewhat analogous case of vineyards, so high an authority as Liebig is of opinion that the land may be retained in fertility without the use of manure by economising the prunings, that is by restricting the drain on the soil to the produce sent to market.

There is no doubt that in this respect coffee being a perennial is differently circumstanced to the annual crops which have been the main subject of investigation among agriculturists in Europe. In the first place the annuals during the early part of their life have very small roots, and are consequently incapable of going in search of food, which must, therefore, be present in quantities largely in excess of what they actually take up. Turnips are a familiar instance of this fact. The seed being exceedingly small, a large excess of phosphates is required in the soil to produce a full crop. Perennials, on the other hand, can send their roots all through the soil in search of the required food. Again it is plain that, whatever may be the amount of food which plants absorb from the air through their leaves, a perennial with its larger surface of foliage will have a great advantage over most annuals.

It is probable that most soils are capable of improvement in respect of the particular product grown on them by increasing the relative proportion of one or more of the principal constituents, and it is certain that in the case of land which has been subject to the spoliation of wash for any time much restitution is needed; but the special conditions of each case require special consideration, after careful analysis of the soil, to see how far the improvement required can be effected at a price that will pay. At present the question we are dealing with is the maintenance of the fertility of a fertile soil, so that we may content ourselves with returning the actual constituents of the crop with such addition as will allow for the too soluble parts of the manure being carried out of the reach of the plant.

Cattle manure. As Mr. Gibson, quoted above, says: "To make good this deficiency we should employ artificial manure." But we have not the necessary knowledge. Cattle manure has been called the only perfect manure, and, as it is the only substance that can return to the land all the constituents removed from it by cultivation, the preference with which it is regarded by planters is fully deserved. At the same time it has drawbacks in its great cost and bulk. The peculiar circumstances of estates on the hill tracts of India involve, in the majority of cases, the impossibility of getting any return whatever out of cattle, so that the whole cost of stock kept must be charged to the manure. Further, about seventy-five per cent. of the weight of cattle manure is water, so that the cost of applying it, which is considerable, goes in great part to the application of matter which is not of itself valuable. Thirty-three pounds of good superphosphate and eighty pounds of nitrate of potash would contain as much nitrogen, phosphate of lime, and potash as a ton of good farm-yard manure, and yet the bulky, costly cattle manure is universally preferred to the concentrated artificial. Why?

The bulky nature of cattle manure is one of its drawbacks, but it is also one of its recommendations. That no inconsiderable part of the good it affords is due to the improvement in the mechanical condition of the soil caused by its bulk may be inferred from the change we sometimes see wrought in a field of coffee by a dose of cattle manure that has been subjected to treatment which could not leave in it much chemically valuable material.

Modes of preservation. Mr. Gibson describes "an experiment made on a large scale for ascertaining the relative merits of the different systems of preserving manure," in which "it was found that manure spread in the usual manner over open farm-yards, exposed to the weather, loses an enormous proportion of its useful materials; and, as might be expected, the loss it sustains is the greater in those materials most useful to plants. Without entering into any details of this very interesting experiment, we may remark that after twelve months' exposure, two-thirds of the substance of the manure had been wasted, while the remaining portion was next to worthless, consisting for most part of the woody matter of the straw used as litter." It is not an uncommon thing to see manure very nearly, if not quite, answering to this description applied to coffee, the owner of which "swears by" cattle manure, and yet it strikes one that he

might find some cheaper means of improving the mechanical condition of his land.

But the quality in cattle manure which especially fits it for coffee is that when fresh, thirty per cent. of its weight is insoluble in water, and a considerable part of this becomes soluble as decay proceeds, and is gradually rendered available for plants as food. Artificial manures, on the other hand, are generally valued in proportion to the degree of solubility of their constituents, since a soluble manure suits the conditions of annual crops in a cold climate such as that of Europe. Naturally, therefore, they have a tendency in the forcing climate of India to stimulate our plants into excessive action, and then being washed to a depth in the soil below the reach of the roots to leave the heavy-laden trees without the sustenance they require.

However great may be the value of cattle manure, there is a physical obstacle to its universal application on coffee estates in the cost involved in carrying it on coolies' heads to any distance up steep paths inaccessible to wheel traffic. Composts made in heaps through the clearing, with leaves, pulp, or some such substance to supply the bulk, and enriched with lime, poonac, and other valuable materials, may be used with advantage; but at best they are expensive methods of qualifying the concentrated artificials, which it is to be hoped careful experiment as to time of application, in frequent small doses, will yet show to be all we need for restoring the constituents of our crops.

The cost of manuring with cattle manure is a most variable quantity both because varying circumstances make the keeping of cattle a far more expensive luxury in some estates than others, and also because cattle manure is a mixture of most uncertain composition, so that we cannot say that in a given quantity of manure we shall supply a fixed quantity of fertilizing material.

Varying value of cattle manure. Some idea of the extent to which the value of cattle manure depends on the food supplied to the cattle may be gathered from the difference in the manurial value of various feeding stuffs taken from a table published by Mr. Lawes:—

Description of food.	Money value of the manure from one ton of each food.		
	£	s.	d.
Cotton seed decorticated ...	6	10	0
Rape cake ...	4	18	6
Linseed cake ...	4	12	6
Cotton seed undecorticated ...	3	18	6
Meadow hay ...	1	10	6
Wheat straw ...	0	12	6
Turnips ...	0	4	0

Its composition is also subject to change from fermentation, the proportion of water being about ten per cent. greater in thoroughly rotten than in partially rotted farm-yard manure; the proportion of soluble to insoluble material is also greater in the latter. It is further liable to great loss, as we have seen, from the unscientific treatment to which it is often subjected.

The analysis given above for cattle manure being an English one is undoubtedly far richer than manure produced on estates generally is; one ton of such manure would about yield the constituents contained in 3 cwt. of crop, and if we allow double the quantity for inferiority in quality, and apply, say, once in three years, we should restore the materials of the crop at a cost of Rs. 10 per acre per annum. Supposing then the ordinary expenditure on the upkeep of an estate to amount to Rs. 40 per acre per annum, to which we have added Rs. 20 for forking and manuring, we should have from a crop of 3 cwt. per acre, at Rs. 25 per cwt., a profit of Rs. 15 per acre—a small enough margin—but a very slight improvement in price would raise it to a fair figure, and there can be no doubt that coffee treated as I have described would yield, in spite of leaf disease, a higher average than 3 cwt. per acre; at the same time we should find our land growing every year richer instead of poorer, and coffee property converted from a precarious and uncertain into a lasting and solid investment.

Cultivation. We have still to consider the change going on in the mechanical texture of our soils, and the measures necessary to maintain their fertility in this respect. Under the alternation of tropical rain and sun to which estates in the open are exposed, the soil is continually growing closer in consistency and becoming less and less pervious to air and water, the free circulation of which is essential to its fertility. Air is necessary to promote the decomposition of the vegetable and

mineral substances in the soil and render them soluble, and water, which is the vehicle of all food to the roots of plants, must have free passage through the soil to bring soluble matter within their reach. Moreover, the rain brings down a considerable quantity of ammonia, which is utilized as food for the plants if the soil is free, but is lost if the soil is stiff.

We have already spoken of forking as desirable in connection with surface wash, and the expenditure of Rs. 10 per annum which was there recommended would be sufficient to keep the soil in a thoroughly free state. Soils in which the proportion of alumina is large are always stiff, and on them forking will show the best results; those which have a large proportion of quartz are naturally free, but even on these it is a good plan to spread the manure and fork it in, as it is then more evenly distributed through the soil.

I believe forking to be a most important operation in connection with leaf disease. Most planters have noticed of late years the poverty of coffee plants in feeding roots which it is natural to connect, though, so far as I know, the connection has not been proved, with the dying back of the branches caused by leaf-disease. It stands to reason that the freer the soil, the easier it is for the tree to replace rootlets which have been destroyed by any accidental cause, and that until they are replaced, the tree cannot return to vigour. It is no wonder then that forking proves beneficial. Our perennial shrubs are reduced to somewhat the condition of annual plants, and require their food finely divided and thoroughly incorporated with the soil instead of in the bulk, which suited them well enough when in rude health.

To sum up the conclusions at which we have arrived, it seems certain that soils under coffee owe the diminution of their fertility far more by waste than to the removal of material in crop. It is absolutely necessary that this waste should be prevented if the fertility of the soil is to be maintained, and it seems probable that this can be done at a cost which, though heavy, would be amply repaid. Careful experiments are needed as well as to determine this as to ascertain the most economical means of returning to the soil the material removed in crop; and it is highly desirable that such experiments should be carried out on an organized and systematic plan by all the planting interests combined rather than be left to the desultory efforts of individuals, which would take a long time to arrive at the required results.

The time has come to coffee planting, as it must come to every industry, when the margin of profit allowed by the conditions of supply and demand no longer permits careless and wasteful cultivation. The planter of India has to contend with the effects of leaf-disease on his trees at the same time that overproduction has reduced the price of coffee to a figure scarcely ever reached before, and he must meet the difficulty with all the resources that science can place at his disposal. No other country in the world offers the same advantages in cheap labour and suitable climate, so that if the time of depression acts as a spur to greater effort and stricter economy, we may well hope to see the industry emerge, strengthened and encouraged for a long and profitable career.

TEA.

Deterioration of tea.

Writing on the alleged deterioration of Ceylon tea, an old planter writes to the local *Observer*:—

"We want more knowledge—scientific knowledge. In fact we know little if anything more about tea-making than we did 12 or 13 years ago. There is no doubt that after land has been yielding tea for some time, unless under specially favourable circumstances, the quality of tea deteriorates, and one thing very noticeable is the decrease in bloom. Take carefully made tea from bushes 3 to 4 years old and look at the buds through a magnifying glass and they present a hairy appearance (like a hare's leg!) Look at tea from the same a few years after, and in most cases the appearance is a comparatively bare glistening surface. I believe this could be materially remedied if we knew how."

Russia forbidding imports of Indian tea.

Russia has announced that no further imports of tea will be allowed to enter its borders, owing to the alleged but utterly baseless danger of thereby introducing

the plague. It is evident that the action is more aimed at harming our commerce than safeguarding the health of her populations. If the Government of India were representative of the interests of the country, their reply would be simple and forcible: refusal to allow the landing of any Russian oil. For the American supplies are ample for all our needs, and the very slight increase in price would be felt by no one. We warrant this would do more to remove Russian fears of plague than the most elaborate proclamations Government can dream of. Not that we have the faintest hope that any such commonsense policy will ever be followed.

Over-grading of small breaks.

A very common failing on the part of small proprietors is to over-grade their tea. This mistake is based on the ridiculous assumption that brokers and buyers buy tea by the names rather than intrinsic value, whereas the result is only annoyance to the broker and buyer, with corresponding reduction of price. What the trade requires are "true teas." We suppose this is mostly due to ignorance of the grades really represented by the names used. Another mistake, and a more serious one, is the excessive sub-division of small consignments into a larger number of grades than the size of the consignment allows of, thus converting them into non-sampling breaks, i.e., of lots under the minimum of 20 chests or 30 half chests which large dealers will alone bid for. The remedy for this is simple. Merely send the whole consignment as one grade or break of unassorted tea, run through a number 8 sieve, leaving the red leaf and dust out. The prices are sure to be more satisfactory, inasmuch as the competition will be keener than were small lots of each grade sent separately.

Insect pests.

An Assam scientist, who is conducting some interesting experiments with various insecticides on tea, writes to ask whether we have ever noticed *Cephaleuros parasitica* (formerly called *Mycoidea*) in its deep-seated form on the branches of the tea plant. We regret to have to confess a painful ignorance as to the characteristics of this pest: perhaps some of our readers may be able to oblige? There has been during the past few years a most regrettable increase in a certain form of fungus on old and poor tea, the leaves turning silvery grey, with similar patches on the twigs and branches. Regarding the trials of Chiswick Compound, of which we hear so much in Upper India, we are informed that on analysis it proves to be merely a compound of sulphur 42 per cent. and soft soap (58 per cent.) Hopes are entertained of its succeeding on Red Spider, which in its less severe form is to be found all over the Nilgiris, and, we doubt not, elsewhere in South India. There does not seem much chance of the Chiswick mixture effecting a cure with mosquito blight, *Helopeltis theivora*. Generally speaking it may be said that sulphur, though deadly to *Acarina*, has little effect on the *Insecta*, bar *Uccidæ*, and not often on them.

Analysis of soils and manures.

Our readers will doubtless be glad to hear that Messrs. J. B. Forster and Co., of Bangalore, now undertake partial analysis of soils and manures at very moderate rates, a departure which we trust will be taken full advantage of by the planters of South India. In connection with this

subject we note that Mr. Kelway Bamber, the chemical expert formerly engaged by the Indian Tea Association, has now severed his connection with the Government of India, and has set up his laboratory in London, 9, Victoria Street, S. W. A few simple directions as to securing fair samples of soils will be of use:—

SOILS.—In 5 or 6 spots in the locality chosen, square holes should be dug to a depth of 18 inches, or to a depth indicated by a change of colour in the soil. From the sides of the holes slices should be taken four (4) inches thick, and intimately mixed on a clean surface, sticks, large stones and coarse débris being removed and noted. From the bulk about two pounds should be taken and enclosed in an airtight wooden box for transmission by parcel post. Where the subsoil differs considerably from the surface, a sample of it should be taken to any requisite depth in the manner described above. The depth of soil and subsoil, condition of weather at the time of taking and the date, should be noted with any further particulars likely to assist in drawing correct conclusions from the analyses.

MANURE.—If in bags, samples should be taken from the centre of each and well mixed, and about one pound sent for analysis, packed in airtight tins or boxes.

TEA.—For the estimation of the tannin, or essential oil, etc., about eight ounces would be required, taken from the well-mixed bulk.

Diseased roots, stems or leaves (air-dried), could be sent in airtight tins.

All samples should be securely packed and marked distinctly.

THE CHEMISTRY OF TEA.

II.

Tannin.

Touching on tannin, Mr. Crole said that gallic or dioxysalicylic acid did not possess the deleterious property of precipitating albumen, gelatine or starch, as tannin did, and since it was just as capable of imparting pungency to tea, it would seem a pity that a great deal more of the tannin was not reconverted into it. He would suggest that experiments be made in tea factories as to the effect of careful regulation of access of air and amount of heat applied during the operation of firing the tea, and that means should be tried to regulate the conversion and reconversion of gallic and tannic acids during the fermentation stage of manufacture. To tannin the pungency of tea was largely due, a valuable property from the commercial point of view. The origin of tannin in the plant was somewhat difficult to account for, but it would seem that it arose, at any rate in part, from gallic acid, though it must be mentioned that during the manufacture of tea some of it was oxidised back again into gallic acid and glucose by the action of a particular enzyme (pectase). From this last reaction it would be seen that tannin was a glucoside. When tea liquor remained in contact with air for some days a cloudiness was apparent which was due to a reaction between the tannic acid and the legumin, and the consequent formation of an insoluble and obscure compound, the astringency of the infusion being of course at the same time decreased to a marked extent. That reaction accounted in some measure for the "mellowing" of tea that was kept for a time. Freshly manufactured teas produced unpleasant symptoms when drunk, therefore they should always be allowed to mellow for at least six months. A deleterious property of tannin was that it precipitated gelatine, and formed with albuminoid matter compounds closely related to leather. When the tannin of tea (or any of the tanno-acids) was taken into the system apart from albuminoid material, it was quickly converted during digestion into glucose and gallic acid, the former being a useful food substance, and the latter at any rate less injurious than the original tannin.

Essential Oil.

The amount of essential (volatile) oil in tea was variable. It was of great importance, as, though present in such small quantities, yet its odour was so strong that it imparted a major share of the aroma and a certain amount of the flavour to tea. Owing to those volatile properties tea loses its characteristic delicate aroma if exposed to the air for any length of time. This constituent was developed to a certain extent during withering, and also during the first stage of firing. Through irrational firing, however, a good deal of it was driven off mechanically by the steam generated in the firing, or may be in part oxidised into resin. He was rather inclined to think that more than one

representative of this class of compounds (viz., volatile oils) was present in tea. He had little doubt that, if proper attention were given to the subject, a very considerable increase in the percentage of essential oil would result, and the tea consequently be greatly improved in quality. It could be extracted from refuse tea, &c., by distillation with steam; but the great difficulty in the way was the seeming impossibility in keeping it, as it so readily resinised in contact with air.

Theine.

Coming to the nitrogenous bodies found in tea, the lecturer said that various alkaloids had been discovered, and he was persuaded that yet more would be revealed by future analysis. On account of the refreshing properties due to theine, all the plants in various parts of the world that elaborated it were used for making beverages. No doubt the value of a tea should be in direct proportion to the theine it contained, but Dr. Driver found, as a result of his analysis of twenty-eight samples, varying in price from 7d to 7s, practically no more theine in high-priced teas than in common ones: for instance, in a sample of *strong* (in the technical acceptance) tea he found 4.43 per cent. of theine, and in a sample of *weak* tea, 4.35 per cent. The amount of chlorophyll present would seem to be actually a reliable index of the quality of black tea since it varied from 3 per cent. in good to 1 per cent. in common teas. What the consumer liked in tea was strength, body, and delicacy of flavour, but he cared little what amount of theine he got, for he had no ready means of estimating the proportion present; yet, if he drank tea on account of its refreshing properties, he would do well to see that he got a maximum of the alkaloid which possessed this important characteristic. Plants which were able to elaborate certain alkaloids in one part of the world either entirely failed to do so when transplanted to another part, or else only did so to a limited extent. The cocoa plant was a good instance in point. And it seemed that for this reason Chinese tea contained less theine than Indian teas. Chinese contained the least, Japanese slightly more, then Java, Ceylon, and Indian, in the order mentioned. It was popularly supposed that tannin was present in tea in inverse ratio to the amount of theine, but that was not borne out by analysis. Indian tea possessed more of both tannin and theine than Chinese teas, but it must not be inferred from that fact that the consumer imbibed more tannin in the one case than in the other, for in household use more China tea had to be put into the pot than was the case with Indian tea.

DISCUSSION.

Mr. A. K. Donald desired to elicit the views of Mr. Crole as to the infusion of tea. He wished to know whether, if tea had water poured over it quickly, and the tea was then taken away, one would get a considerable proportion of theine and very little tannic acid, or whether, if it was infused for a long time, the proportion of tannic acid would not be increased as compared with the theine. Further, he would inquire what effect carbonate of soda had if put into the water; did not that extract more tannic acid? It certainly produced a very peculiar flavour; and it had been stated in some books (particularly in Professor Johnston's "Chemistry of Common Life") that putting in carbonate of soda had the effect of getting out some albuminoids and consequently making the tea more nutritious. It would be interesting to know whether Mr. Crole had any theory upon this point.

Mr. H. E. Bristow, referring to the statement of Mr. Crole that for the fermentation of tea a temperature of 85° deg. or less should be maintained, remarked that no mention was made as to the length of time of fermentation. He would like to know whether there was any method of fixing the proper time for the fermentation process to last; was it to be determined in any other way than by the colour of the tea?

Mr. T. W. Davies said the reader of the paper had spoken of the principle of tea as an essential oil. He would like to know whether Mr. Crole had had a sufficient quantity of that essential oil to test it so as to know whether it was really an essential oil containing an hydrocarbon; might it not be a volatile alkaloid after the character of, for instance, nicotine.

Mr. D. M. Stewart asked if Mr. Crole's attention had been called to the differences of the teas of different districts. The remarks in the paper as to the cool temperature in which the fermentation should be carried out led him (Mr. Stewart) to think of the difference there was between Darjeeling and almost all the Plains gardens in the matter of flavour. He had himself noticed, when in Darjeeling, that if a cool blast of air, such as was produced by a mist cloud coming down, went over a garden as the leaf was being

plucked, as a rule the flavour was very much increased; that was what was known as the Darjeeling flavour. Mr. Crole did not seem to think that much change could take place while the leaf was growing, but this fact seemed to point in the other direction—that some change might take place whilst the leaf was growing, if there was a sudden change of temperature.

Mr. Crole, in reply, said that when tea is infused the theine is extracted very much more rapidly than the tannin. For that reason tea should only be infused for three or four minutes, in order to get the maximum of theine and the minimum of tannin; the tea-leaves should not be in the water more than four minutes. With regard to carbonate of soda, its action was, in the first place, to soften the water, thus allowing more of the flavouring matter to be extracted. Another prominent action was to diminish the astringency of the tea by neutralising, and even preventing, the solution of the tannin. He did not think it had any other action on the constituents of tea. He did not know what ruled the time of fermentation. In one garden it might be that eight hours' fermentation would be required, while the next, separated by only a fence, would not want more than two hours. The difference was probably due to soil and jât of tea. But he thought that teas should always be fermented according to their colour and smell, and not by any time method, unless, of course, they were fermented in a refrigerator. What the effect would be of a cold cloud while the leaf was being plucked he could not say; but undoubtedly a certain amount of cold during the process of fermentation was of great advantage. It was inexplicable to him that, while the tea was growing or being plucked, a cold cloud or cold blast should bring out the flavour, but he could understand that that might be the fact. Mr. Davies had spoken with regard to the essential oil in tea. There was little doubt that it was absolutely an essential oil; but there were other alkaloids, of course, in tea, and some of them had not been determined. He was himself working at the determination of one of them—not associated with the essential oil of tea, but with what was called boheic acid—and he thought he would be able to get an alkaloid from that. As he stated in the paper, boheic acid was probably not a single organic acid, but a compound of assamic acid either with another acid or with an alkaloid.

The Chairman, in moving a vote of thanks to Mr. Crole, said he was not capable of judging of the excellence of the paper from the technical and scientific point of view, but it contained some advice which he was quite sure was most useful and valuable, and which he hoped would be taken to heart. It was impossible to doubt, as was stated in the paper, that so long as the tea manufacture and similar manufactures were worked by mere rule of thumb, so long would the manufacturers fail to get the best that was to be got out of their products. The experiment was tried in Assam, for a short time, of having a chemist to help the planters generally in the process of manufacture. He had not heard what became of the experiment, but he believed it had not lasted for any length of time. It was one which, of course, could not succeed unless kept up for a number of years together; and it required an expert who should be well paid, and who would confine his whole time and labour to the study of chemical questions. He was sure that, both in the manufacture of tea and in the manufacture of indigo, such an experiment would pay the planting community over and over again. With regard to the remarks made in the last paragraph of the paper as to the cheesy smell of tea on arrival at the docks, that was an old question in Assam. He remembered that years ago there were endeavours to get rid of it by changes of boxes or by inquiries as to the chemical action on the lead, but nothing effectual had come of them. Concluding, the Chairman said he was only expressing the unanimous feeling of those who had heard the paper in offering Mr. Crole their very best thanks.

Mr. Christison said: As the Chairman had done him the honour of calling upon him to contribute to the discussion, it might seem ungracious on the part of one who had been so long connected with the production and manufacture of tea, unless he stated that it was not the want of interest in the subject or of will that made him diffident in rising. He thoroughly agreed with the Chairman as to the vast importance to the tea-planting industry of having scientific assistance. So important an industry ought to employ scientific experts continuously; but great care must be taken to engage those most suitable and competent for the necessary investigations. He felt that as the paper was of so technical a nature he was not competent to express any opinion as to its merits. In reference to the least scientific portion of it, which treats of the chemistry of the

process of manufacture, if the opinions expressed on the more practical points are deductions from Mr. Crole's independent scientific investigations, all that he could say was that, so far as they go, they tend to confirm the commonly approved practice in the tea districts, and what has been that practice for a very long time. Though on the technical points he was not in a position to speak, he had no hesitation in saying that thanks were due to Mr. Crole for devoting himself to scientific research.

DISTRICT ASSOCIATIONS.

COORG.

PROCEEDINGS of the Quarterly General Meeting of the Coorg Planters' Association, held at the Bamboo Club, Pollibetta, on Wednesday, 3rd March, at 2-30 P.M. **PRESENT:** Messrs. E. M. Breithaupt, G. Davies, W. Davies, D. A. Donaldson, J. W. Finlayson, F. W. Gerrard, H. G. Grant, A. Johnston, O. Jones, R. Kaundiniya, John Logan, H. Marriott, R. D. Tipping, W. Wright, and H. G. Parsons, *Honorary Secretary*; Mr. H. S. Wood, *Visitor*.

MR. JOHN LOGAN, *President*, in the Chair.

New Member.—Proposed by the Honorary Secretary, seconded by the President, that Mr. Marriott be elected a member. Carried *nem. con.*

Deputation to Chief Commissioner.—The Honorary Secretary read the annexed statement with reference to the subjects discussed. Proposed by Mr. Breithaupt, seconded by Mr. Tipping, that the thanks of the Association be conveyed to the deputation for their services.

Land Record Cess.—Resolved that the Honorary Secretary be instructed to write to the Commissioner of Coorg, asking whether the Land Record Cess is intended to be a permanent charge.

Mr. Leslie's Transfer.—Resolved "That the thanks of the Association be conveyed to Mr. M. Leslie, late Ex. Engineer, for the excellent manner in which he constructed and maintained the roads and public works in Coorg, and that the Association regrets the Government of India have not seen fit to extend his services to the Province.

"In wishing Mr. Leslie every success and the promotion he so well deserves, this Association do cordially endorse the following remarks of Mr. Mackworth Young, late Chief Commissioner of Coorg, in his review dated 30th November 1896:—

"The Chief Commissioner desires to record his appreciation of the energy and skill with which Mr. Leslie has performed his duties during his term of office."

Resolved that the Honorary Secretary do forward a copy of the above resolution to Mr. Leslie through the Secretary to the Chief Commissioner of Coorg.

U. P. A. S. I. Circulars—Famine Fund.—Read letter from Secretary, U. P. A., re "Famine Fund."

Resolved that a subscription list be started amongst members of this Association, and that all donations be remitted collectively from the Coorg Planters' Association.

Coffee Association.—Read correspondence, and resolved that while approving the resolution of the Shevaroy Planters' Association, this Association is of opinion the question be left to the U. P. A. and its representatives in London.

Member of London Chamber of Commerce.—Mr. Mangles having accepted office was noted with pleasure.

Lady-birds and Bug.—Read letter, and recorded.

Coffee and Duty in London.—Read correspondence on the subject between representative in London and Secretary, U. P. A. Recorded.

Exemption of Duty on Manures and Tea Seed.—Read letters. This Association is unable to furnish reliable figures as to nitrate of soda imported, but the Agents in Madras and West Coast can doubtless do so.

Charges on Coffee in London.—Read circulars. Resolved that the representatives of the U. P. A. on the London Chamber of Commerce be strongly supported in any action they may deem advisable.

Committee of Inquiry.—Read confidential letter from Chairman, U. P. A. Recorded.

Malarial Parasite.—Read and recorded with satisfaction circular from Secretary, U. P. A., stating that the Government of Madras had addressed the Government of India with reference to the appointment of an expert for the investigation of this subject.

Individual Members of U. P. A.—Read circular from Chairman, U. P. A. Resolved that this Association cannot guarantee the

number of members until it is known what the subscription and rights of private members will be.

The Honorary Secretary explained certain modifications that he was prepared to accept to meet the views of those who were partially opposed to the measure, and he would draw up his modified scheme at an early date and forward same to the Secretary, U. P. A., for circulation and discussion.

Resolved that this Association considers a limited number of members from each Association according to present proportion of votes should, as a tentative measure, be admitted to membership of the U. P. A. and approves the modified scheme of the Honorary Secretary which meets all objections so far raised.

Act XIII. of 1859.—The Honorary Secretary informed the meeting that the Government of India had instructed District Judges and Magistrates to refer cases, when opportunity offered, to the High Court, Madras, with reference to the procedure in issuing warrants under the Act. This Association had already forwarded a case from the file of the District Magistrate of South Canara to the Secretary, U. P. A., who had retained Messrs. Wilson and King to watch the interests of the U. P. A.

Address to the Queen-Empress.—Resolved that an address from the U. P. A. as suggested by the Chairman be approved.

Shooting in Government Forest.—Read letter from Secretary to Chief Commissioner. Recorded with satisfaction.

Timber Charges.—Read letter from Commissioner of Coorg stating that the charge on bamboos has been reduced and that the rule for sale of timber trees had been amended as desired.

Theft of Coffee Plants.—Read letter from District Magistrate of Coorg. Resolved that a reward of Rs. 5 be given to the constable in question.

Coorg-Tellicherry Post.—Read letter from Postmaster-General stating that arrangement had been made for letters posted in Coorg one day to reach Tellicherry the next, and *vice versa*.

Mail Tonga Service.—Resolved that the Honorary Secretary be instructed to write to the Postmaster-General and Government Mail Contractor pointing out that the most favourable route will be from Hunsur *via* Arnichowk, Tettimati, Pollibetta, Ammatti, Siddapur to Mercara, and that this should be considered before completing the new contract and subsidy.

Coffee Stealing Funds.—Read letter from Chairman, Mr. F. W. Gerrard, resigning office of himself and Committee.

Resolved that Messrs. F. W. Gerrard, A. H. Jackson and Honorary Secretary be asked to act.

Motor Car.—The Honorary Secretary informed the meeting that he had received full particulars from Mr. Wood, and had had an interview with that gentleman who was present that day to state his case to the members.

Mr. Wood briefly informed the members of his intentions and said that he had had an offer from the present Mail Contractor to take over his service from 1st November next and asked the Association to use its influence to secure him the Mail service and subsidy. Resolved that if Mr. Wood is able to successfully prove his scheme, he will be heartily supported by this Association.

Bazaars in Coorg.—The Honorary Secretary brought to the notice of members the quantity of inferior grain and rubbish that was sold to coolies, and more particularly the number of old and diseased cattle that were imported every bazaar day and bought and consumed by coolies to the detriment of health. Such cattle were also a means of introducing various forms of cattle disease. Resolved that the Commissioner of Coorg be addressed as to what measures should be taken to abate such nuisance.

Weights and Measures.—The President pointed out the inconveniences from the use of several different measures and weights in Coorg. Resolved that the Commissioner be addressed.

Petty Shops.—Resolved that the attention of the District Magistrate be drawn to certain huts where it is suspected illegal liquor is sold.

In conclusion the Honorary Secretary suggested to members that it would perhaps be of advantage if the Association occasionally had an extraordinary meeting to discuss questions solely on the subject of the cultivation of their industry, such as the different experiences gained as to digging, pruning, manuring, etc.

Interesting views were sometimes exchanged at the meeting of a few at private residencies which, if discussed and debated at a special meeting, might possibly lead to interesting results. The meeting approved.

The following papers were laid on the table:—

Wynaad Planters' Association, 6th January 1897.

Nilgiri Planters' Association, 21st January 1897.

P. W. D. Coorg Adm. Report for 1895-96.

With a vote of thanks to the chair.

H. G. PARSONS,

Hon. Secy.

Annual General Meeting, Mercara, end of May.

WYNAAD.

PROCEEDINGS of a General Meeting held at Meppadi Club on March 3rd, 1897. Present: Messrs. Abbott, H. Atzenwiler, Beachcroft, R. Lamb, B. Malcolm, F. R. Malcolm, F. S. Malcolm, C. A. Mackenzie, Mackinlay, Robinson, Romilly, Taylor, Trollope, Waddington, H. B. Winterbotham, Wright, and Mr. Hockin, Honorary Secretary. Mr. G. Romilly in the Chair.

1. *Proceedings of the last meeting* were taken as read.

2. *New Form of Contracts*.—Read letter from Mr. Winterton promising attention to the matter.

3. *Roads*.—Read letter from the Honorary Secretary to Government forwarded through the Collector of Malabar and the Collector's endorsement thereon; also extract from the Budget Report of the Malabar District Board for 1897-98. Recorded with satisfaction.

4. *Coffee Passes*.—Read Demi-official from the Superintendent of Police, Malabar, pointing out how very important it is that passes should be always accurately made out, as the system of passes is a

factor in the prevention of Coffee stealing on the road, which planter would do well to make the most of. At present many are inaccurate. Sometimes the signature, sometimes the date or some other important particular is omitted which makes the pass valueless.

5. *Remuneration of Police on Special Duty*.—Read Honorary Secretary's letter to the Inspector-General of Police and the latter's reply. Recorded with satisfaction. The chairman proposed that Rs. 150 be paid to the police as last year as a reward for the successful effort of the police to prevent coffee robbery. Carried.

6. *Nomination of Member of the District Board*.—Read letter from the President, District Board, announcing Mr. Walker's resignation and requesting the Association to nominate another gentleman for the post. The Honorary Secretary was instructed to forward the name of Mr. J. W. Hockin as the Association's nominee.

7. *Outturn of Coffee*.—Read letter from Captain Carslake, R.N. The Honorary Secretary was instructed to thank Capt. Carslake for his letter, and to point out that Europeans are employed to check the measurement of coffee in the curing yards, and that seamless bags are obtainable through the agents; but the Association think that it is practically impossible to arrive at any fixed standard of moisture in Coffee applicable to Wynaad, the Coast and London.

8. *U. P. A. S. I. Circulars*.—(a) *Purchase of Bark*.—Read circular quoting endorsement, No. 707, Rev. Dept., Madras, informing the Secretary, U. P. A. S. I., that Govt. has authorized the Director of Cinchona Plantations to invite tenders for such quantities of bark as may from time to time be required to supplement the existing yield of the plantations, but that no guarantee can be given as to the quantity annually required, or the prices which will be sanctioned. Recorded with satisfaction.

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The Wynaad and the Planting Industry of South India ...By "Francis Ford," Re. 1.

	Rs.	A.	P.		Rs.	A.	P.
Book-keeping for Planters ...	...	1	12	0	Estate Buildings (Ceylon P. A. Prize Essay), illustrated ...	5	0
Coffee: Ceylon Coffee, Soils and Manures, Hughes ...	...	3	8	0	Forage Plants, and their economical conservation ...	0	12
" Brazil as a Coffee Country ...	...	1	8	0	Gardening in Ceylon, W. Cameron ...	1	8
" Grub, Haldane ...	...	1	8	0	India Rubber and Gutta Percha, All about ...	2	2
" Cultivation in Ceylon ...	...	0	4	0	Liming, importance of ...	0	4
" and Chicory ...	...	1	12	0	Planters' Note Book or Molesworth ...	3	8
" Planters' Manual, Brown ...	...	3	12	0	Palmyra Palm ...	2	0
" and its Enemies, Nictner revised by Green ...	...	1	4	0	Plantains or Bananas ...	0	8
" in South India, Arnold ...	...	7	8	0	Pruning, Desbars' Tree ...	1	8
" in Mysore, Elliot ...	...	7	8	0	Manures, Harris' Talles on ...	6	12
" by Locke ...	...	12	8	0	" Lawes' Compensation of unexhausted ...	1	0
" by Laborie, Planters' Manual ...	...	2	0	0	" Munro's Soils and ...	2	3
Cinchona Planters' Manual, Owen ...	...	4	0	0	Ramie, all about Aloes and Ramie ...	1	5
" Cultivation, T. Christie ...	...	1	4	0	Spices, all about ...	3	12
Cocoa, Cultivation in Ceylon ...	...	0	6	0	Tobacco, all about ...	3	8
" Planting in Ceylon ...	...	0	8	0	Tobacco, by Locke ...	7	8
" by Bidie ...	...	0	8	0	Tea by Bamber ...	4	0
" by Hart, illustrated ...	...	4	12	0	" Industry in Ceylon in 1886 ...	0	12
Cardamoms, by T. C. Owen ...	...	1	0	0	" Cult. and Manuf. by Hay ...	0	4
Cotton in Ceylon, Hon. W. Mitchell ...	...	0	8	0	" Cult. in Ceylon ...	0	6
Chemical Analyses, Ceylon Manual, Cochrane ...	...	3	8	0	" at High Elevations in Ceylon ...	0	3
Crops, How Crops Grow, Johnson ...	...	10	0	0	" Young T. Planters' Companion ...	4	8
" How Crops feed ...	...	10	0	0	" Nilgiri Tea Planter, McPherson ...	1	0
Ceylon in the fifties and and eighties ...	...	1	8	0	" Planting in India ...	0	12
Elements of Agriculture, Fream ...	...	3	8	0			

P.S.—Any books required, not in the above list, we shall do our best to procure and forward by Value Payable Post only.

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(b) *Famine Fund*.—Read three circulars forwarded by the Secretary, U. P. A. S. I.

A list was circulated in the room and Rs. 520 promised.

The Honorary Secretary was instructed to invite further subscriptions from members of the Association not present.

(c) *Import Duty on Tea Seed*.—Read letter from the Chairman, U. P. A. S. I. The meeting approved of the opinions expressed by the Chairman, U. P. A. S. I., and the Honorary Secretary.

(d) *Coffee Adulteration*.—Read circulars forwarded by the Secretary, U. P. A. S. I. Recorded.

(e) *Individual Membership of the U. P. A. S. I.*—Read circular from Secretary, U. P. A. S. I. Recorded.

(f) *Warrant issued under Act XIII, 1859*.—Read circular containing letters from the Hon'ble Mr. H. P. Hodgson and Chairman, U. P. A. S. I., and Counsel's opinion on the legality of search warrants. The meeting cordially endorsed the letter from the Hon. Secretary to the Secretary, U. P. A. S. I., approving the Hon. Mr. H. P. Hodgson's opinion.

(g) *The Queen's Jubilee*.—Read circular proposing the presentation of an address to Her Majesty by the U. P. A. S. I. and draft of the same. Cordially approved.

(h) *Coffee Association*.—Read circular on the proposed formation of an Association to promote the sale of Coffee. Recorded.

9. *Act XIII. of 1859. Contracts*.—The Hon. Secretary stated that Mr. Powell had sent him contracts in which it was provided that the advance should be repaid by the Maistry and which the Second Class Magistrate had assessed for stamp duty as bond for repayment of money cognisable only by a Civil Court. To bring a contract under Act XIII, it must be provided that the advance shall be recovered by the master out of wages and not repaid by the servant. The use of the word "repay" should be avoided and the word "recover" substituted.

10. *New Member*.—Mr. J. W. Handley was elected a member of the Association.

11. *Papers on Table*.—Proceedings of a monthly Committee meeting, the Quarterly general meeting, and a Special meeting of the Kavaray Planters' Association, January 1897.

Proceedings of the Nilgiri Planters' Association, January 1897.

" " Central Travancore Planters' Association.

Annual General Meeting, 1897.

12. *Timber Defence Fund*.—Mr. Atzenwiler stated that the final appeal to the High Court against the decisions in his favour in three other courts had been rejected. Recorded with satisfaction.

13. *Annual Meeting of the Medical Fund Subscribers*.—The Acting Secretary read his report on the working of the Fund for the last year and laid his accounts on the table. The latter showed a balance in favour of the fund of Rs. 520. Approved. A cordial vote of thanks to the Acting Hon. Secretary for his able management of the affairs and finances of the fund and to Mr. Romilly for the trouble he had taken in securing the services of a new Doctor in England was passed.

Messrs. J. R. Malcolm, Mackinlay, Romilly, Lamb, Hockin, Winterbotham and Waddington were elected members of the Committee for the management of the Medical Fund during the coming year.

RESOLVED:—That the Committee be requested to consider the expediency of putting the subscriptions to the Medical Fund on the basis of a fixed rate for each estate for each acre under cultivation; and in the event of such an acreage assessment being found feasible, to endeavour to arrange for a cess which will enable the Committee to make more complete provision for the wants of the district.

14. A vote of thanks to the Chair closed the proceedings.

(Signed) G. ROMILLY,

Chairman.

(Signed) J. WILLIAMS HOCKIN,

Honorary Secretary.

NORTH MYSORE.

PROCEEDINGS of the Annual General Meeting of the North Mysore Planters' Association held at the Balehonore Club, 1st March 1897. Present: Digby T. Brett, President, representing Estates Hutton Kodigi, Bandara and Belcode; F. S. Hay, Hon. Secy., Kotordi; H. Browne, Kerkie, Coondah-Serraputty, Allegeshware, Yellimudoo, and Guditota; H. Pilkington, Koppa and Doobla; O. Scot Skirving, Yellagode; C. Danvers, Kalagoor and Hulsoor; F. Clifford, Murguddi and Arabidycoll; E. Clifford, Balihonnur; H. A.

Campbell, Netrakul; F. Parton, Siddra Bennoo and Henchi; A. J. Lipton, Kundera Goondi; H. M. Northey, Gooty Kan; C. C. Harvey, Herrigudda; W. H. Lincoln, Jeccan Kodigi; H. G. Bonner, Merkul; D. O. Allardice, Gubgull; C. P. Reed, Merthikan; W. A. Bidie, Badui Kan; W. Maxwell Maynard, Quard Hitlow; L. D. Colledge, Halgar.

The following Estates were represented by Proxy: Gooboor, Kircassia, Kesinverthi, Bupponji, Hospet, Dereel, Bibbenluke, Isabel, Guntanaick, Kannalla, Sooboongoodigay, Davara Kan, Kulsapur, Barekodi. Visitors: H. Edington, W. Thompson.

Proceedings of the last General Meeting were taken as read and confirmed.

The Annual Report was read by the Secretary, ordered to be printed and circulated.

The President, Mr. Digby T. Brett, then addressed the Meeting. Ordered that the speech of the President be printed and circulated with the proceedings of the Meeting.

In discussing the Annual Report, the Secretary was instructed to add paras. giving the opinion of the Meeting upon the present state of the Roads, the transfer of the Cutcherry from Hurriapur to Koppa, and the necessity of a branch railway to Chikmagalur.

Mr. Brett's proposal of a vote of thanks to Mr. F. S. Hay, seconded by Mr. Maxwell Maynard, was carried unanimously.

The Meeting then proceeded to the election of the Committee to hold office for the year 1897-98, and the following members were elected:—

O. Scot Skirving, President; Messrs. Brett, Hay, Browne, F. Clifford, Danvers and Pilkington.

Mr. Hay then addressed the Meeting with regard to the subscriptions to be paid by subscribing Estates for the year.

Proposed by Mr. Hay, seconded by Mr. Danvers:

That this Association re-affirm the proposals made at the last Annual General Meeting, and that this Association shall subscribe for the year 1897-98 the sum of Rs. 625 to the Reserve Fund of the United Planters' Association, and the sum of Rs. 375 to the current account of that Association.

In order to raise the necessary funds required by the North Mysore Planters' Association, Mr. Hay proposed and Mr. Brett seconded that in future the subscription to this Association be at the rate of 2 as. 6 pies per acre cultivated with coffee, cardamoms or tea, and 6 pies per acre for every uncultivated acre of land belonging to an estate.

That the maximum subscription to be payable by any one estate shall be Rs. 75, the minimum Rs. 15.

That members who subscribe to this Association without owning land pay annually Rs. 15.

That each complete sum of Rs. 15 paid shall entitle the subscriber to one vote.

Amendment proposed by Mr. Danvers, seconded by Mr. F. Clifford raising the maximum to Rs. 90 was discussed and finally disapproved.

Another amendment proposed by Mr. Maxwell Maynard, seconded by Mr. H. Pilkington, reducing the tax from 2 as. 6 pies on cultivated area to 2 as. was lost.

The question of Individual Membership to the U. P. A. was then opened by Mr. Hay, and his proposals were seconded by Mr. Browne.

1. That Individual Planters and Estates be allowed to join the U. P. A. S. I., and shall be entitled to all the privileges of membership on payment of the subscription.

2. That each member shall pay an annual subscription of Rs. 10 payable at the commencement of the official year of the Association.

3. That no member whose subscription is more than six months in arrears be allowed to exercise a vote.

4. That each District Association shall have one vote for every Rs. 10 of annual subscription.

5. That no votes by proxy be allowed to Individual Planters or Estates.

Mr. Brett addressed the meeting traversing the arguments of Mr. Hay, and showing how under certain contingencies such membership might undesirably affect the voting at the U. P. A. Meetings and concluded his remarks by proposing:—

That this Meeting of the North Mysore Planters' Association is of opinion that individual membership in any form to the U. P. A. is undesirable, and that its constitution should remain as it is, an Association of Associations.

Other gentlemen having spoken, Mr. Brett's amendment, seconded by Mr. Danvers, was finally carried by 30 votes to 5.

Coffee Association.—Resolved that it is not at present advisable to form such an Association.

Read proceedings of the Sub-Committee of Santaveri.

Delegate for Dussara Assembly.—The Committee were authorised to nominate a member.

The proceedings closed with a vote of thanks to the Chairman.

(Signed) O. SCOT SKIRVING, PRESIDENT,
N. M. P. Association.

ANNUAL REPORT.

GENTLEMEN,

Your Committee have much pleasure in laying before you the Annual Report and Accounts for the year now ending.

	RS.	A.	P.
We began the year with a credit balance of ...	1,256	6	6
We received from subscribing estates ...	1,778	13	7
From interest and sundries ...	26	11	6

Making a total of Rs. ... 3,061 15 7

Our expenditure under all heads amounted to ... 1,812 6 0
Which leaves us with a credit balance of ... 1,249 9 7
or very nearly the same as we began the year with. We regret to state that certain estates (Santaveri, Ambady, Hadwoni, Hutchen Hachloo and Mylemony) are in arrears for either the whole or part of last year's subscription; had they paid up we should have had a surplus, as we ought to have, to add to our reserve fund.

Included in the expenditure you will note Rs. 125, subscribed to the U. P. A. 1895-96 account, and Rs. 625, subscribed to the U. P. A. Reserve Fund. As regards the former item, the executive of the Head Association found it necessary to make this call to which all District Associations responded, in order to clear off outstanding claims. At the last General Meeting held in Bangalore the ordinary Annual Subscription was raised 50 per cent.; our subscription therefore is now Rs. 375 instead of Rs. 250. You will remember that last year Mr. Acworth brought forward a scheme raising a large amount by voluntary subscription to place the U. P. A. on a sound financial footing.

The opinion of this Association as expressed at a General Meeting held in June last was that though it approved of Mr. Acworth's scheme in principle it did not agree with it in detail. We considered that it was necessary to form a Reserve Fund for the U. P. A., and suggested that a sum of Rs. 5,000 should be annually raised from the District Associations in addition to the ordinary subscriptions; that each District Association should collect its share in the manner it deemed most suitable, and that the voting at the General Meetings of the U. P. A. should be regulated according to the amounts subscribed. Your delegates accordingly brought forward these propositions, but as you will see by referring to the Report of the U. P. A. Meeting, they were not carried, and under the circumstances it was deemed advisable not to press the matter, though notice was given that the question of voting power might be brought up again.

Your delegates subscribed in the name of this Association the sum of Rs. 625 towards the U. P. A. Reserve Fund for this year, and though they intended that this should be an annual subscription, they did not absolutely pledge themselves in the matter.

Subscription lists for donations towards the U. P. A. Reserve Fund were circulated among you as requested by the executive, but as members did not respond, it is now for you to settle what our policy is to be for the next year, what sum we are to subscribe, and the manner in which it is to be raised.

There is another question on the Agenda paper, that of individual membership to the U. P. A., which will come up for discussion later on. We would merely remark here that we cannot admit that what Mr. Hodgson is reported to have said at a meeting of the Nilgiri Planters' Association, namely that the principle had been already accepted by the U. P. A., is the case: It is for you now to express an opinion for the guidance of your delegates at the next meeting, when the matter will probably be decided.

As regards subscription of estates to this Association, you will remember that at a General Meeting held at this Club in June last we agreed to a crop tax of Rs. 2 per ton. Nearly every estate, though we regret not quite all, responded to this call. We would especially urge on all members the necessity of unity. In an Association like ours it is impossible to fall in with the views of every one, and whatever course it is decided to adopt, we trust that all, no matter what their private opinions may be, will loyally support resolutions passed by the majority.

The past year has been one of unusual importance in the history of the Planting Industry of S. India. The Government of India, in response to a request made by the U. P. A., appointed a committee of enquiry to investigate the question of Planters' grievances. The committee forwarded its report to the Government of India last autumn, and though the result has not been made public yet, we have every reason to hope that from the evidence laid before it, the Government of India will see the necessity of introducing some measure to remedy our jurisdiction difficulties. Our thanks are due to our late Resident, Mr. Mackworth Young, I. C. S., for the

exceedingly able manner in which he presided over this committee enquiry, and for the great interest he took in all matters relating to Planters. Your President wrote to Mr. Mackworth Young on his departure, and in the name of this Association expressed our thanks for the sympathy he always displayed towards Planters in Mysore.

We have lost also during the year the services of Mr. Sparkes, who for six years was our Deputy Commissioner, and who during that period proved himself to be an able official in all matters relating to Planters, and whose departure we greatly regretted. In Mr. Weir, his successor, we have an officer of many years tried experience, and we feel convinced that our interests will not suffer under his regime.

We regret that it is impossible to give a favourable report for the past season. An unusually long drought in last hot weather, followed by an abnormally heavy monsoon, has resulted in disaster to many of us, and crops have been generally the smallest on record. This has not only been the case in coffee but also in other produce such as supari and cardamoms. We can only hope that the coming season may prove more favourable, and that bumper crops in 1897 will enable us to retrieve the losses of 1896.

While most sincerely regretting the scarcity and famine in certain parts of India, we are glad to state that there does not seem to be a likelihood of famine in these parts. There was a scare last October when grain went to famine rates, but fortunately it did not last long and prices soon fell again to nearly the normal rates.

Your attention has been called by circulars to the subscription list towards the Famine Fund. We feel sure that you will all admit that it is our duty to subscribe to the best of our ability towards the fund, and we invite the special attention to it of all those who have not already subscribed.

We are glad to be able to report that two works which we have always strongly advocated, the extension of the Railway from Birur to Shimoga and the erection of a bridge over the Bhudra at Tadsa, are now in active progress.

The projects for the establishment of a Sub-Taluk headquarters at Bahonore, and of a Civil Court either at Tarikere or Chickmagalur for the benefit of residents near those places, are still under the consideration of the Government. We hope to see these desirable changes carried out before long.

Roads and Communications.—The roads in the District still require the closest attention by the officials of the D. P. W. Owing to the energy and hard work of Assistant Engineer Mr. Bore, some improvement has taken place within his sphere of control and more results would be shown by him if his subordinate staff were increased and were in our opinion more reliable. The state of the road through the Luckwalli jungle is so disgraceful, for though metal has been put down in a perfunctory manner it has already been cut up by traffic, and unless the side drains are immediately attended to, the state of the road will be as bad as ever in the coming monsoon. It is to be hoped more attention will be paid to the cutting back of the jungles on either side of the road, as the drip from overhanging trees largely contributes to the present bad state of the roads.

It would also be advisable to address Government on the necessity of the annual sales of the contracts for the Ferries being made at such a date that the incoming contractor may have all his arrangements made to begin work on the 1st June in every year.

We regret to inform you that though we believe sanction has been given for the transfer of the Amildar's Court and Taluk Treasury from Hursapur to Koppa, still nothing has been done. The delay is most deplorable and annoying, especially so owing to the roads being infested with Dacoits, whom the united efforts of the Police and some Government Sowars seem utterly unable to cope with, resulting in a general feeling of insecurity among the inhabitants of certain Taluqs. The present state of the roads, infested as they are, makes travelling unsafe and brings home more than ever the necessity for the transfer of the Treasury to a point nearer the centre of the parts to which it is of most importance. At present it is unsafe to send unarmed men to the Hariapur Treasury for money necessary for the payment of our coolies.

We are glad to note that the Birur Shimoga Railway is under construction, and we would strongly urge the necessity of a branch line to Chickmagalur—a town centrally situated for the whole of the Planting District.

In conclusion, there is one point to which your attention is desired. Great many members are most dilatory and careless in answering circulars sent out by the Honorary Secretary. Last November you were asked to furnish statistics as to the amount of nitrate of soda and other chemical manures imported for fertilizing purposes. In many cases no answer was sent, and in others members only sent returns after a lapse of several months.

We must impress on you, therefore, the importance of answering, and that quickly, questions like these, which are for the general good.

We now ask you to proceed to the election of a President and Committee for the ensuing year, and also to elect a delegate to represent you at the Mysore representative assembly.

Since the above was written, we have to lament the loss of one of our members, Lieut.-General Leslie, late Inspector-General of Artillery in India, who after a distinguished military career settled down among us as a Planter. We feel sure that you will all join with us in expressing our sympathy with his family at the loss they have undergone.

(Signed) F. S. HAY,

Honorary Secretary.

[We greatly regret that pressure on our space forbids us reproducing the interesting speeches of Messrs. D. T. Brett and F. S. Hay annexed to the Report.—ED.]

SHORT STORY.

"DEATH HIS BRIDE."

A Tiger Story.

THE long Indian day had come to an end, the sun had sunk in golden splendour, leaving in his wake streaks of dusky red—changing anon into bronze. I had just come back to my bungalow, after having been out nearly all the day down in the fever-stricken district that lay at the foot of the little hill on which my bungalow was perched. I had had an extra busy time of it that day, for cholera, and fever of a malarious type were raging amongst the natives, and were spreading in an alarming manner among the Europeans as well, and being the duly medical man within a radius of twenty miles, I had my hands pretty full; so I was thankful when my work was done, and I was able to enjoy a rest in my arm chair, and lately I had hardly known the word *rest* in its practical sense. As I sat smoking and watching the sunset sky—and there is no sunset to equal an Indian one—my thoughts took unto themselves wings, and carried me back to the old Homeland, and to those dear dead days of long ago; and as my fancy dwelt once more among the old familiar scenes of my boyhood's home, and the dear ones who had helped to make that home so happy, I felt a great yearning to get back to it all again.

Then the recollection of a fair girlish face took possession of my brain, and when I thought of the love that bound us to each other, and that some day that sweet face would be my own, I felt that I must do all in my power to bring that day to a nearer certainty; and the very thoughts of the happiness which the future held in store for me sent a thrill of pleasure through my frame, and then I began to think what I would do when *she* came to join me in fighting this world's battles, of the various improvements I would make in the old bungalow, and last of all what joy it would be to find a bright little wife waiting to welcome me home after a hard day's work—and a hundred other such delightful (to me) speculations regarding *her*, when my dreams were rudely broken in upon by the entrance of that indispensable factotum of every Indian household—the "boy"—bearing a tray on which lay a letter, and gravely announced that it was from "Dunbar Sahib," and then waited to see if I had an answer to give. I hastily tore open the letter, thinking it was a call to see a sick case on Dunbar's estate, which was about fifteen miles from my place, and as I was the nearest medical man to the coffee plantations on the—hills, I consequently had often been called up by the planters to attend to them and their coolies in cases of sickness,—but the letter contained just these few lines—"Dear Dare,—I am obliged to go down to M—s to meet my fiancée, Miss Farrel, who is expected out in the steamer that arrives from home next week. I leave this to-morrow and am writing to ask if you could kindly put me up for a night. There's a tiger about my place, but have no time to go after it. More when we meet.

Yours, &c.,

RICHARD DUNBAR."

Dunbar was a special friend of mine, and a general favorite in the district. He owned one or two of the finest coffee estates on the—hills, was a splendid sportsman, had more than his share of good looks, and all this, combined with the fact that he was very well off, helped to spread his popularity a good bit. That he was shortly to be married, and that the young lady was expected out from home, I was fully aware of, and to the reason of his having to go to M—s was not a surprise to me; so going to my desk I wrote him a "chit" to say that I would be delighted to put him up on the following night. My Anglo-Indian readers will readily understand the

unceremonious way friends are apt to drop in at one's bungalow and ask you to put them up for a night, or whatever the case might be, at the shortest possible notice; and I think that one of the great charms of the very few that this country possesses is the unconventional bearing that we have towards each other. Indian hospitality being proverbial, and I rather think it is the same in all colonized countries—however this is a digression; well, after having instructed the "boy" to get a room ready for the next day's expected visitor, I returned to my long arm chair to finish my interrupted smoke. I had not sat down for many minutes, when I heard most unearthly yells and shrieks proceeding from the servants' quarters. Presently my "syce" came running up quite out of breath with fear and excitement, and ejaculated in broken sentences that a "burra bagh" had just walked away with one of the servants' dogs that had been lying outside the door of its owner's house; and would not the "Sanib" come and shoot the tiger; but not being a particularly keen sportsman, coupled with the fact that I was dead tired, I said no, and dismissed the man with the injunction to have the dogs tied up every night. I retired to bed early that night, but was unable to get much sleep; I seemed to be over tired, and when eventually I did drop off into a doze, my brain was tortured by all manner of horrid nightmares, of people being chased by rogue elephants, and torn to pieces by man-eating tigers, Dunbar and myself seemingly being the victims of these dream tragedies; and when I was awakened by my boy for my morning cup of tea and cold tub, I felt thoroughly worn out both in mind and body. I was busy enough all that day, and when I returned home in the evening I was "dead beat." Dunbar had already arrived, and after having exchanged greetings, we sat, and talked, and smoked till dinner was announced. I was quite glad to have a companion for my usually solitary meal, and Dunbar was such a bright chap, he always had so much to talk about. He was full of what he was going to do when he was married; it appears that he was engaged before he came out to India, some four years ago, and was of course looking forward to seeing his sweetheart again with much pleasure; "and you know, old chap," he said at the conclusion of the recital of his love story, "she is such a little brick, she has had awful long odds against her, for her people wanted to marry her to some Johnny with a handle to his name, but my little girl stuck to me through thick and thin; and patience won the day, and me the best girl in the world." Poor Dunbar! how well I can remember the lingering tenderness of those last words of his, they still ring in my ears though years have past since that night. I fully sympathised with his feelings, for I myself was deeply in love with a certain little blue-eyed English girl, and was duly waiting for the time when I would have a bit more added to my "pay" to claim her who was more to me than anything else in the world. During the conversation that followed, Dunbar mentioned the tiger he had spoken of in his letter to me; and said that as he was to be married as soon as he came back from M—s, he intended giving a "beat" in honour of his fiancée for whom it would be a novel experience, and also as a final winding up of his bachelor days. "Will you come, Dare? I have asked all the ladies in the district to join, it will be a good way of introducing the future Mrs. Dunbar to the people about here." I accepted the invitation on the condition that I was not too busy just then, which seemed hardly likely, considering the busy time I was already having. "Don't you do much shooting yourself, Dare?" asked my companion after a short silence. "No! I can't say that I do," I replied, "I have occasionally gone after black-buck, but it is not much in my line you know, besides a medical man hasn't much time at his disposal for shooting. Just take the present time for instance. Why, I hardly have time to sit down to my meals without being called away in the middle of them to attend to some fresh case of fever or cholera," and then I told them of the tiger that had come the night before and which took the dog from the servants' lines; when suddenly he startled, and cautiously whispered, "What's that Dare, there—something among those shrubs," pointing to some in the garden; "there man, can't you see it?" "Where—where?" I exclaimed, but Dunbar had risen and went into his room, the door of which opened out on to the verandah. Presently he came out with the rifle he had brought with him in his hand, and coming to my side asked if I minded him having the first shot, to which I said "no," though

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I was puzzled to know what it was for, but was not kept long in the dark as to what it was all about and his mysterious proceedings, for a bang, a war, and then something falling heavily in the garden, soon told me that it was a tiger that Dunbar's keen eyes had spotted in the garden. We called for a lantern, and went down to where we heard the animal fall, and there lay a magnificent tiger, dead as a hammer with a leaden pill in his heart. I congratulated Dunbar on his luck, and we both concluded that it must have been the same brute that had walked away with the dog on the previous night. We had the tiger removed from the garden into the verandah, and as we looked at the dead King of the Jungle, Dunbar remarked, "I did not think of bagging a trophy like this to-day, though I always take my rifle about with me; any way I am deuced lucky!" he went down as he finished speaking, and examined the tiger's claws, and then exclaimed as he displayed the large white teeth of the dead animal, "Gad! I would not care to have those in me," and certainly those gleaming bits of ivory would not be at all pleasant things to have in one. "Well, if you get the other one that you are going to beat for too, you will be in luck's way" I said, "but the whole of last night I was dreaming of you and myself being torn to pieces by tigers, and felt quite nervous when I got up this morning. Any way you've turned the tables by bagging stripes yourself, and so I hope that it proves the fallacy of dreams;" he laughed and said dreams generally turned out the reverse, but at the same time he certainly would not care for the experience of being munched up by a tiger.

The next morning saw the departure of Dunbar and his trophy, the former to continue his journey, and the latter to the nearest taxidermists. The days that followed Dunbar's departure were busy ones for me. The fever was doing deadly work all around me, and I was out all day, and was very often called for at nights too. A week had passed, and I heard that Dunbar and Miss Farrel had arrived, and I was fully determined to attend his wedding by hook or by crook. The wedding had been fixed for the Wednesday of the following week, and I was invited to stay the night of the Tuesday (the day of the shikar, and the last of Dunbar's celibacy) at his bungalow. When Tuesday arrived, I was unable to get away till late in the afternoon, and arrived at my destination when it was quite dark; but late as it was, not one of the shikar party had returned for the dinner that Dunbar was going to give that night to his bachelor friends as a farewell to his life in single harness. So sitting in one of the many long sleeved chairs that were in the verandah, I began to smoke, and fell to imagining what my feelings would probably be on the eve of my wedding day, when my reveries were shattered by the sound of a horse galloping furiously up the road leading to the bungalow; the sounds grew nearer, and presently horse and rider were visible coming up the road, and in a few seconds were at the foot of the verandah steps, and a voice, which I instantly recognised, called out "Boy, boy, is the doctor Sahib here?" It was Hazzle, a young planter living on the "tote" next to Dunbar's, some four miles away. "What's the matter?" I exclaimed as I came to the head of the steps. "Is it you, Dare?" For God's sake, man, get your horse and come with me to my bungalow, Dunbar has been badly mauled by a tiger, and we could get him no further than my place; but the worst of it all is we can't get Miss Farrel away from him, she seems quite determined to stay with him, but here's your nag—come! let's be off. I was quickly in my saddle, and we were galloping as fast as our nags could lay hoofs to the ground towards Hazzle's bungalow; and as we went along, he told me as well as the great pace at which we were going would allow him, of all the events relating to the accident. It appears that after having placed the ladies of the party in a safe position the men—about fifteen of them—had stationed themselves round the jungle which the tiger was believed to be in; and then after a lot of felling and beating of tom-toms on the part of the "beaters," and the barking of dogs, the tiger must have got confused, by such an unusual hub-bub, and made a rush out close to where Dunbar was standing; he fired, but somehow only wounded the animal. Every one marvelled—for he was such a sure shot; any way the tiger maddened with pain, made a rush at him; he fired again, but not before the infuriated brute was on him, crunching Dunbar's arm between its powerful jaws. The shots had attracted the rest of the party to the spot, and a well-directed bullet from one of them put an end to the animal; but Dunbar was rendered quite insensible, for besides his com-

pletely mutilated arm, there was a severe wound on his head. By this time we had reached the bungalow, and throwing our reins to the "syces" who came running up as we arrived, we went in. There were several ladies there, and nearly all the men who had joined in the "beat," but beyond just glancing at them all, I took no further notice of them but asked to be shown Dunbar's room at once. His shooting clothes were still on him, except for the right sleeve of his coat which had been cut away, and his head had been roughly bandaged up, and I could see by the light of the lamp how bad he looked. But the sight of the slim girlish figure, kneeling by her unconscious lover's side—with oh! such a yearning expression on her face, made my heart give a throb of pain! It was, as I guessed at once, Miss Farrel. She turned her head when I entered, and on seeing me, and guessing I was the doctor, she rose to her feet and came to my side. "You are Dr. Dare, I think?" she said in a wonderfully sweet voice. I nodded. "Then for Mercy's sake bring him round! they say he is dying, but I don't believe it. Oh! my Love! my Love, you shall not die" and she turned once more to the wounded man's bed, sobbing wildly, and I could see the agony of her soul was awful. But I had my duty to perform, and gently but firmly took her out of the room, while I examined and attended to Dunbar. His arm was so dreadfully torn and crushed as to require immediate amputation, and the wound on his head was very severe; in fact, I knew from my first look at him that poor Dunbar had shot his bolt, and that he would not live through the night; and it was my painful duty to have to break the awful truth to his poor little sweetheart. After doing all I could for Dunbar, I braced myself up for the trying ordeal and went in search of her. I found her sitting in the verandah with some of the other ladies; on seeing me, she got up and came forward, and eagerly asked how Dunbar was, and what I thought of his condition; but as I hesitated in giving my answer, she must have guessed the truth, for with a wild light in her beautiful eyes, and with a despairing cry of "Oh! he must not die! Dick, you shall live!" she rushed past me before I could stop her, and was in her lover's room. I went after her to see she did not disturb him, but I need not have been afraid, for she was as quiet as the unconscious man by whose side she knelt. Nothing would induce her to leave him, and after one or vain efforts on my part to do so, I let her remain with her lover. And as I watched those two, the fair girl, whose very soul was racked with pain and longing for him she loved, and then the strong handsome young fellow, who was fast drifting away into that imperious existence beyond the grave, I felt a choking sensation in my throat, and my eyes grew suspiciously dim; for though I had experienced many a painful scene during my medical career, this was the saddest case I could remember; for not only did I feel for the pain of the sweet girl who had gone through long years of waiting for her lover, but also for him, he was such a favorite, his good will and generosity were known far and wide, he had life's fairest prospects before him, and to be thus cut off in the flower of his manhood and on the eve of his wedding day, seemed dreadfully sad.

During the small hours of the morning, I made one more effort to get Miss Farrel away, but she only shook her head and murmured in a strange far away voice, "No! it will be for the last time, please let me stay." Dunbar's breathing had been growing fainter and fainter. I tried to force some stimulant down his throat once, but his clenched teeth made the attempt futile, and I knew ere morning dawned he would have run his earthly race. As I sat watching I began to think of those strange dreams I had had the night before Dunbar shot the tiger at my place and sadly mused on his laughing answer when I had told him of them. I was just about to adjust the bandage round his head a little better, for it had slipped, when I saw Miss Farrel's head fall forward on to the hand of the un-mutilated arm of her lover—she had been clasping it in her own up to now—but thinking her asleep, I did not disturb her. Just then Dunbar sighed, and a convulsive shiver passed over his frame; it was the end; in a few minutes he sighed again, and as the first streak of dawn entered the room, his spirit took its flight to that land "where the wicked cease from troubling and where the weary are at rest." I went to Miss Farrel's side to awake and get her away; I put my hand on hers, it was icy cold; she would never awake again in this world, for she had joined her lover on the "eternal shore,"—Death indeed was his Bride.

"DEMON."

THE MADRAS EQUITABLE ASSURANCE SOCIETY.

(SUCCESSOR TO THE MADRAS LAUDABLE SOCIETY, ESTABLISHED IN 1829.)

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Touching a shipment of Indigenous Tea seed, an experienced Indian Planter writes us from Madura District dating 24th June 1896: "Just received the Tea seed; it has arrived in perfect condition, notwithstanding unnecessary delay in transit, and does you credit. Please book me for five maunds as early next May as possible."

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ROUND THE BUNGALOW.

NOTES BY A PLANTER'S WIFE.

Hot cross buns.

Easter is now very near, so I give two recipes for hot cross buns which will be found very good. Take 1 qt. milk, 12 oz. butter, 12 oz. sugar, $\frac{1}{2}$ oz. mixed spice, 2 eggs, 2 oz. German, or $\frac{1}{2}$ teacupful of good thick small beer yeast and 4 lbs. of flour. If to be made with currants, add 1 or $1\frac{1}{2}$ lbs. of currants, clean washed, picked and dried. Make the milk blood-warm; if the weather is cold, rather warmer. Put it into a gallon pan, with half the sugar, 6 oz. of flour, the yeast, and eggs; mix together, cover the pan, and put into a warm place. When this has risen with a high frothy head, and again fallen and become nearly flat, it is ready for the remaining portion of the ingredients to be mixed with it; but while rising, the butter should be rubbed in with the flour between the hands until reduced to small crumbs. Mix the whole together into a nice mellow dough. If the flour is not very good and strong, about 4 to 6 oz. more may be required to make the dough of the right consistence. Cover the pan; let it remain in a warm place for about half an hour, or until the dough has risen 4 inches. Make into buns by moulding the dough up into small balls lightly under the hands, and place on warm tins, slightly rubbed over with butter, about 2 inches apart. Half prove, and cross; brush the tops over with milk, and finish proving; bake in a hot oven; when done, brush the tops over again with milk. The best method for proving is to put the tins on shelves in a warm cupboard near the fire. Place a pan with hot water at the bottom, but put no tin on the pan. Put a piece of heated iron or brick into the water in the pan occasionally to cause a steam to ascend, which will keep the surface of the buns moist, when they will expand, or prove, to their full size; otherwise the surface will be hardened and prevent expansion. Keep the cupboard door close shut until ready to bake.

Another recipe for the same.

Take one quart of milk and water about 90 deg. Fahr., add 12 oz. of sugar, 2 eggs, 1 lb. of flour, 2 oz. German yeast; mix these well together and let it stand for two hours, and then rub 10 oz. of butter into 4 lbs. of flour, add 2 lbs. of mixed fruit, 1 oz. of spice, $\frac{1}{2}$ teaspoonful of essence of lemon; mix it all well together; let it lay in a warm place for from an hour to an hour and a half; tin and prove, and well bake in a hot oven.

It sometimes happens that one has two or three buns left over, and they become stale, when they may be utilized in making the following nice pudding:

Cut them up into slices and butter them; then arrange them lightly in a buttered mould; fill up the mould with a cold custard flavoured with essence of mixed spice and sweetened to taste; let it stand for 10 minutes to thoroughly soak before putting it on to boil; boil for 1 hour or steam for $1\frac{1}{2}$ hours. Serve with spice sauce.

Spice sauce.

Into some sweetened melted butter stir in some sifted ginger and a teaspoonful each of bruised, but not powdered, allspice and beaten cinnamon; if preferred, a few drops of essence of allspice and cinnamon may be used.

POISONED FROM HEAD TO FOOT.

WE call particular attention to the subjoined statement. No incident of its kind, of equal interest and importance, has occurred of late years. A declaration so startling in its general scope, and so full of corroborative detail, certainly warrants the conclusion that a new epoch in the healing art has dawned upon us. Aside from the force of the legal form which it assumes, the facts, as alleged, rest upon the results of a thorough and careful investigation.

(Copy.)

I, George Lack, of 123, Stamford Street, Waterloo Road, London, do solemnly and sincerely declare as follows:—

"I was always a strong, healthy man up to April, 1876. At this time, whilst engaged at the Stamford Street Embroidery Works, cleaning out a tank which had been used for dyeing purposes, I slipped and fell in the tank (which was covered with verdigris),

cutting both my elbows. The parts soon became swollen, and in a week's time the flesh was putrid, as if gangrene had set in. My system seemed to be poisoned, and I began to lose strength rapidly, for my appetite left me and I could not bear the sight of food, what little I did eat lay on my chest like lead. I went to the Royal Free Hospital, Gray's Inn Road, where I was under treatment for five weeks, but I got worse. After this I got an order and went into the Lambeth Infirmary, where I was placed in No. 11 Ward. At this time my condition had become serious, for I felt so sick and faint that I could scarcely move, and, after a time, I got so bad that I could only get up for an hour or two each day. Later large abscesses formed on my shoulder, and gradually spread over my face and the upper part of my body. My face was completely covered with the abscesses, which, on healing, left deep marks, that I bear to this day. After this I had swelling around the joints, and large abscesses formed in the calf of my leg, and I had also running wounds, extending from the top of my ankle to the bottom of my feet. An offensive discharge of matter came from the parts, and it seemed as if the abscesses were drawing the life out of me. I was now in a hopeless, helpless state, and felt that I did not care how soon my end came. For days and days I never closed my eyes, and on one occasion I had but little sleep for eighteen days and nights together, the doctor's sleeping draughts having no effect upon me. When I did at length fall asleep I slept from Thursday to Sunday afternoon. From all the doctor's medicines and applications I only got temporary relief. On one occasion the doctor said that I could not live throughout the day. The nurses placed a screen round my bed, expecting that I should die during the day, and my brother was sent for. When the doctor called at night he was surprised to find me alive. However I took a turn for the better, but for months afterwards I was, as it were, on the brink of the grave. I had to be lifted in and out of bed, and was fed on slops and light food. Sometimes better, and at other times worse, I continued in this wretched state for over FIVE YEARS, during which time I remained in the hospital. In August, 1881, I became tired of being in the hospital, and was carried to my house. I was so weak and emaciated that I got a pair of crutches to help me to hobble about the house. My father and friends who saw me were shocked at my feeble and emaciated appearance, and thought I was not long for this world. I lingered on in the same wretched state for two more years, expecting and wishing that I should soon be out of my misery. In November, 1883, after suffering over seven years, my father bought me a bottle of medicine called Mother Seigel's Curative Syrup, and persuaded me to try it, saying that it had been of great benefit to him. After I had taken half the contents of a bottle, I felt brighter and in better spirits than I had been in for years. My appetite improved, and by continuing with the medicine my legs began to heal, and I got stronger and stronger. In less than three months I was able to put aside my crutches and walk with the aid of a stick. After I had taken Mother Seigel's Curative Syrup six months I was back at my work, as strong as ever I was in my life, and have since kept in the best of health. I wish the particulars of my case known to other sufferers, and the Proprietors have my consent to make what use they like of this statement. And I make this solemn declaration, conscientiously believing the same to be true. By virtue of the provisions of the Statutory Declaration Act, 1835 (Will. IV. c. 62).

“(Signed) GEORGE LACK.”

Declared at No. 16, Godliman Street, Doctor's Commons, in the City of London, this 13th day of April, 1893, before me. (Signed) George H. Brooks, a Commissioner for Oaths.

Here we have a case of profound and persuasive blood poisoning. Verdigris (chemically the bibasic acetate of copper) is, when introduced into the circulation, a slow poison, for which no positive antidote is known. There is no doubt that the physicians in the hospitals did all that could be done, with the knowledge and resources at their command. Unhappily their treatment, at best, was only mildly palliative; the poison continued its deadly work, until it saturated the poor fellow's entire system and perverted all its functions. What but an ultimately fatal result could have been reasonably expected?

Mr. Lack's final and perfect recovery, through the use of Seigel's Syrup, illustrates beyond the need of comment the unprecedented power of that well-known remedy to renew the digestion, stimulate the secretory organs, and thus to purify the blood. In common with all who shall read the details of this case, we most keenly regret that Seigel's Syrup was not taken immediately after the results of the accident first appeared.

MARKET SUPPLEMENT.

SATURDAY, APRIL 3, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (March 12, 1897) says:—The supplies brought forward in auction this week have been on a large scale and a slow demand prevailing, the Market generally is decidedly easier.

The highest point in East India however was touched last Friday when several favourite Home Trade marks realized extreme rates, but this week prices show a decline of 2/- to 3/-.

Central American kinds were offered in large quantities and meeting poor competition values gave way a further 2/- to 3/-, Costa Rica especially showing a sharp fall.

Heavy receipts and cheap cost and freight offers caused a further decline of 2/- in Futures, this being the lowest point reached for years; but at the close the market shows a recovery of 6d. to 1/- from the bottom.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending March 10th, 1897, says:—Bank rate 3%. Bombay Exchange closes at 1s 3d. Brazil Exchange 7½d. Rupee paper 3½% 62½. Silver 29½d per oz.

The market continues freely supplied, and holders being anxious to realize, prices at the close are again rather lower, the decline since our last being about 1s to 2s for most kinds, except finest which continue to sell very well. The quality of the new East India crop is decidedly good, and fine Home-trade marks are eagerly competed for. Brazil markets are weak, and prices are materially lower.

According to Messrs. Duaring & Zoon the European stocks on the 1st inst. shewed an increase of 10,350 tons, and the visible supply a decrease of 770 tons, the figures being 117,050 tons and 234,310 tons respectively, against 106,700 tons and 235,080 tons on the 1st February, 1897.

Daily receipts have averaged 9,666 bags in Rio, and 11,500 bags in Santos.

Futures, owing to the continuance of large receipts, have further receded, and close weak at a decline of 2s 9d to 3s, viz.:—Good average Santos in Havre, March delivery closes at fcs. 56½, in Hamburg pf. 46½, and No. 7 low ordinary Rio in New York \$8.65.

To-day's London official quotations are:—

	March	May	Sept.	Dec.
Rio	44/6	44/9	45/-	45/3
SANTOS	45/3	45/3	46/3	46/6

We quote:—

Ceylon, mid. to good mid.	107/ @ 117/	Costa Rica, mid. to fine...	90/ @ 109/
Do. small to low mid.	90/ „ 102/	Do. ord. to low mid.	75/ „ 88/
East India, mid. to good	99/ „ 107/	Jamaica, good to fine ord.	64/ „ 74/
Do. small to low mid.	86/ „ 94/	Do. greenish to fine	colory... 84/ „ 125/
Guatemala, mid. to fine...	88/ „ 102/	African	38/ „ 41/
Do. good ord. to low	74/ „ 87/	Columbian, ordinary	65/ „ 69/
Salvador, good ord. foxy	73/ „ 74/	Do. good ord. to	low mid... 70/ „ 88/
greenish...	73/ „ 74/	Do. mid. to fine...	89/ „ 102/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
Rio	2,723,000	1,903,000	1,832,000
SANTOS	4,263,000	2,690,000	3,348,000
	6,986,000	4,593,000	5,180,000

Auctions:—

16 casks and tierces 27 barrels and bags Plantation

Ceylon	...	@ 98/ @ 123/
1,725 bags Mysore	...	86/6 „ 116/
2,959 bags Coorg	...	83/6 „ 111/
502 bags Neilgherry	...	87/6 „ 112/
7,024 bags 1,029 bags Wynaad	...	80/ „ 107/6
East India 127 bags Nelliampathy	...	88/ „ 107/6
576 bags Naidoobatum	...	87/ „ 118/6
26 bags Shevaroy	...	88/6 „ 102/6
80 bags Pulneys	...	80/ „ 91/
74 barrels 25 bags Jamaica	...	60/ „ 68/6
4,550 bags Costa Rica, chiefly sold	...	75/ „ 106/
1,590 bags Guatemala, chiefly sold	...	65/6 „ 102/6

327 bags Nicaragua	...	@ 78/6 @ 98/
118 bags Vera Paz and Coban	...	72/ „ 94/
721 bags Columbian, part sold	...	79/ „ 95/6
129 bags Peruvian, part sold	...	57/6 „ 74/
55 bags Bolivian bought in.	...	
145 bags Lahat bought in.	...	
182 bags Nyasaland	...	55/ „ 87/6
11 bags Sanchez withdrawn.	...	
470 half-bales Mocha, small part sold	...	88/ „
137 bags Liberian bought in.	...	
13 bags Montserrat bought in.	...	

THE UNITED STATES.

1st March.

Stock	1897.	1896.
...	29,710 tons	22,350 tons.
Afloat	27,180 „	15,060 „

Visible Supply 56,890 tons 37,410 tons.

	Value No. 7	9½ cents	13¾ cents.
February.	1897.	1896.	1897.
Imports	27,650 tons	17,940 tons	52,300 tons
Deliveries	24,880 „	21,470 „	54,470 „

BRAZIL.

Stocks 28th February.

	1897.	1896.
Rio	243,000 bags	161,000 bags.
Santos	398,000 „	251,000 „
Total	37,710 tons	24,240 tons.

Receipts 1st July, 1896, to 28th February, 1897.

Rio	2,640,000 bags
Santos	4,177,000 „

Exported 1st July to 28th February.

	1896-7.	1895-6.
Rio to Europe	660,000 bags	590,000 bags
„ the States, &c.	1,650,000 „	1,175,000 „
Total from Rio	2,310,000 bags	1,765,000 bags

Santos to Europe	2,730,000 bags	1,815,000 bags
„ the States	1,100,000 „	720,000 „
Total from Santos	3,830,000 bags	2,535,000 bags

LONDON.

Quotations 1st March.

	1897.	1896.
Middling Plantation Ceylon	101/	100/
Fair channel Rio, floating terms	45/6	60/
Good channel do.	49/	62/
Good average Santos do.	47/6	65/

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of March 5th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1896-1897...	1,334,019 packages.	852,869 packages.	30,479 packages
1895-1896...	1,273,290 „	748,555 „	44,261 „
38,311 pkgs. INDIAN	Total 63,441 packages were offered in public auction this week.		
24,331 „ CEYLON			
799 „ JAVA			

Tea statistics as given by the Tea Brokers' Association are printed below. Deliveries of British Grown Tea from the 1st June to the end of

SUPPLEMENT TO PLANTING OPINION.

February show an increase, while the stock of all Tea is very little above the corresponding date last year, in spite of increased imports.

Indian. An advance has taken place in the market, specially noticeable in Teas for price and medium descriptions. The better quality of the autumn crop has probably disappointed those who expected heavy supplies of common and medium Teas, which are now found to be much wanted. The official telegram from Calcutta gives exports to U.K. to end of Feb. as 131,000,000 lbs., against 121,000,000 lbs. to same date last season. It also states that this Season's crop is 148,217,416 lbs.

Week's av. Tea sold on Garden Account, 1897, 27,589 pks., av. 9½d.
1896, 17,105 pks., av. 8½d. 1895, 17,018 pks., av. 10d.

		1897.		1896.	
		Pkgs.	Price.	Pkgs.	Price.
Assam	...	14,480	p 10½	6,483	p 10½
Cachar and Sylhet	...	6,551	p 7½	6,977	p 7
Chota Nagpore	...	...	...	...	...
Darjeeling	...	346	p 1/2½	191	p 11½
Dooars	...	4,348	p 8½	2,488	p 7½
Kangra Valley, &c.	...	...	...	...	...
Neilgherry	...	179	p 7½	...	...
Terai	...	873	p 8	95	p 5½
Travancore	...	812	p 7½	647	p 7½

Comparative prices of Indian Tea in London:—

		1897.	1896.	1895.	1894.
DUST.	(Fair ordinary, dark liquor)	4½d	4½d	4½d	4½d
FANNINGS.	(Red to brown, strong rough liquor)	4½d	4d	5½d	4½d

BROKEN TEA.	(Brownish to blackish, strong liquor)	7d	6d	7½d	5½d
PEK. SOUG.	(Blackish greyish, useful liquor)	7½d	6½d	8½d	6½d
PEKOE.	(Greyish to blackish, some tip, useful liquor)	9d	8d	9d	8½d
PEK. SOUG.	(Blackish greyish, inferior liquor)	5½d	5½d	6½d	5½d
PEKOE.	(Blackish greyish, some tip, inferior liquor)	6½d	5½d	7½d	6½d

Ceylon. Last week's advance was generally maintained, especially in Teas for price and in medium grades of whole leaf Tea. Broken Pekoes, although showing some advance, sold irregularly and were not so keenly competed for as whole leaf grades. The official wire from Ceylon gives shipments for Feb. as 6,500,000 lbs., against 8,000,000 lbs. last year, and estimates the quantity available for Mar. as 8 to 8½ million lbs. Av. for wk. rather over 8½d. agst. 8d. for same period last year.

Comparative prices of Ceylon Tea in London:—

		1897.	1896.	1895.	1894.
PEKOE SOUG.	(Ordinary leaf; fair liquor)	6½d	6½d	7½d	6½d
PEKOE	(Ordinary leaf, little twist; fair liquor)	7½d	7½d	8½d	8½d
PEKOE SOUG.	(Rather bold leaf; indifferent liquor)	5½d	5d	6½d	5½d
PEKOE	(Somewhat bold leaf; indifferent liquor)	6d	5½d	7½d	6½d

Java. Only 799 packages were brought forward; these in sympathy with other grades sold with good competition at better prices. 108 pks. from "Perbawatte" averaged 10d. per lb.

MOVEMENTS of TEA in LONDON (in lbs.) during FEBRUARY.

		IMPORTS.			DELIVERIES.		
		1897.	1896.	1895.	1897.	1896.	1895.
INDIAN	...	10,302,366	7,687,360	7,297,944	10,981,048	10,854,125	9,260,259
CEYLON	...	8,037,412	6,897,286	5,744,580	6,975,894	5,844,062	4,849,776
JAVA	...	253,960	513,170	463,120	159,390	255,500	242,060
CHINA, ETC.	...	1,166,311	1,722,472	1,952,474	3,350,999	3,237,147	3,613,534
TOTAL lbs.	...	19,760,049	16,820,288	15,457,918	21,467,331	20,190,834	17,965,629

FROM 1st JUNE TO END OF FEBRUARY.

		IMPORTS.			DELIVERIES.			STOCK.	
		1896-97.	1895-96.	1894-95.	1896-97.	1895-96.	1894-95.	1897.	1896.
INDIAN	...	122,799,386	111,023,802	105,971,481	94,125,298	90,094,555	87,066,425	55,424,698	50,490,398
CEYLON	...	68,569,628	60,365,360	53,678,620	68,048,636	61,566,944	55,781,166	19,078,526	16,520,268
JAVA	...	2,537,640	3,005,940	2,600,150	2,856,140	2,839,550	2,285,570	669,200	1,103,900
CHINA, ETC.	...	32,142,221	39,604,592	45,713,365	30,792,902	31,728,639	34,353,162	20,988,914	27,586,841
TOTAL lbs.	...	226,048,875	213,999,694	207,963,616	195,822,976	186,229,688	179,486,323	96,161,338	95,701,407

BANK RATE 3 per cent. EXCHANGE on London three months sight.—Calcutta 1/3 7/8 Colombo 1/3 7/8

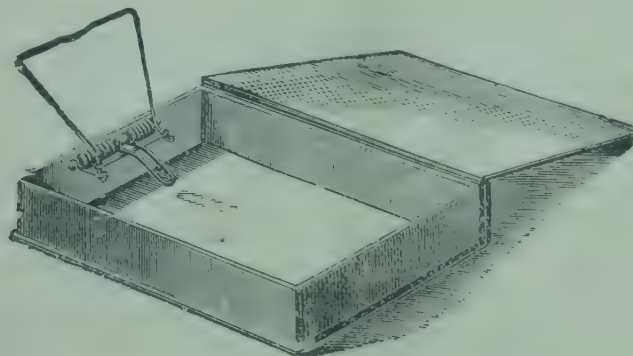
PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9½d.) March 5, 1897.

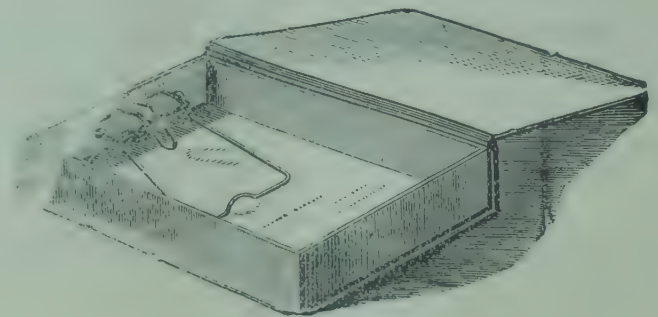
GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	179 p	7½	...	...	...	...	...	...	...	...	...	...	14½c	7½ 8
Coa	67½c	9	8½c	10	45½c	9	...	...	...	...	...	...	1½c	5
Dunsandale	32 p	6	11 b	6 7½	5 b	5½	4 b	5½	11 b	5½	...	...	...	...
Pykara Falls	80 p	7½	...	...	27½c	8½	20½c	7½	33	6½	...	...	...	...
Travancore	812 p	7½	...	...	...	...	...	...	...	...	...	...	...	...
Glenmore	240½c	6½	...	...	157½c	5 6	79½c	7½	...	...	2½c	4½	2½c	4
Home	80½c	6½	...	...	46½c	6	29½c	7½	...	...	3½c	5	2½c	4
Invercauld	81 p	7	24½c	9	54	6½	...	...	...	...	...	...	3½c	4½
Isfield T Co	5	8½	5	8½	...	...	...	...	...	...	...	...	...	...
Poonmudi	184½c	7½	31½c	8½	92½c	7½	10½	7	45½c	6½	...	...	6½c	4½
Sth. Travancor C.V.	222	7½	...	...	92	7½	130	6½ 8½	...	...	...	...	...	...

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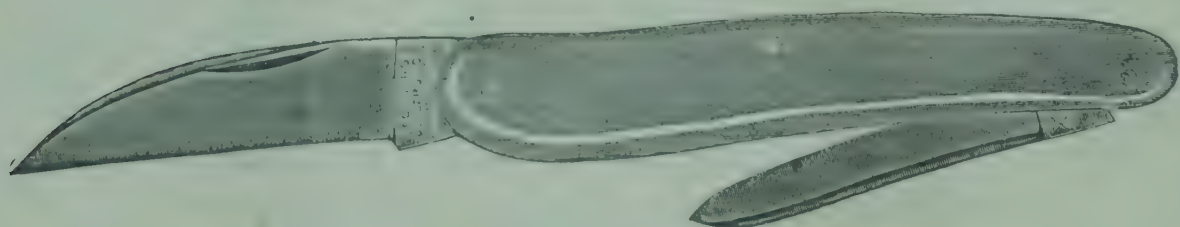
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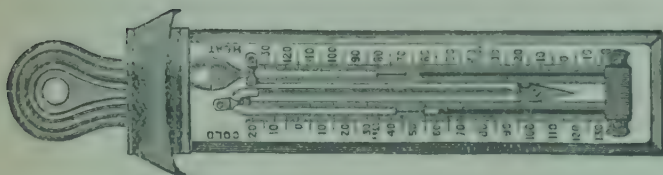


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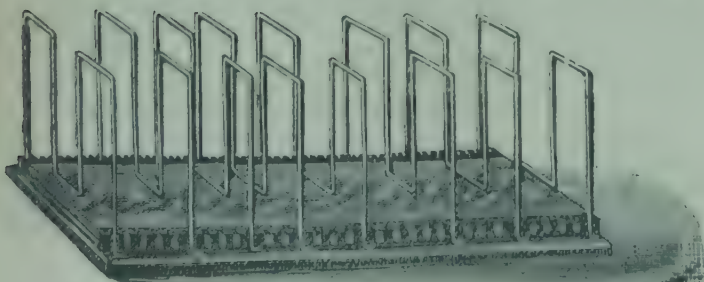
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PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, APRIL 17, 1897.

[No. 8.]

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 17th April 1897.

Central Travancore.

Rate 1-79, from January 1st to date 7-21. *Crops.*—Tea flushing good. March yield considerably above that of same month last year. *General Health.*—Fair. *Labour.*—Still a little short everywhere, and the difficulty in getting coolies appears to be increasing.

North Wynaad.

MANANTODDY, Weather.—Since last report calm, still, dusty nights and misty mornings have been the rule, and there has been a prevalence of pleasant sea-breezes which were frequently very strong of an afternoon. An occasional light breeze in the early morning from the eastward served to keep the land-wind in remembrance only. On 21st March there was a slight drizzle, and on 28th a slight shower, with more or less of cloudy weather during the interval. On 1st April a few drops of rain fell and since then clouds would sometimes work up from the eastward, promising rain, but

affording only an electrical display. *Plant diseases.*—None, spike and small berries are suffering a little for lack of rain in the hot, dry parts of coffee. *General Health.*—Feverish. *Labour and Grain.*—Plentiful. *General Remarks.*—The Forest Department has kindly disafforested some blocks of bamboo, lantana and grazing land, with the view of tempting planters to take it up, but another much smaller bit of reserve jungle which was wanted by us, and that would do excellently well for coffee, is not to be thrown open.

Coorg.

POLLIBETTA, 13th April.—*Weather.*—Beyond a sprinkling of rain on the 1st instant, not sufficient to measure, which has brought out a very partial blossom, there have hardly been any signs of rain except thunder and lightning in one direction or another, and the sun is very hot and the east wind has been very severe at times. This morning it is quite misty. *Crops.*—The first set has been good, but rain is badly needed to swell the berries. The blossom mentioned above is small, but looks healthy and is likely to set well. Trees have been making a good lot of spike after the first blossom, but if the rain keeps off in this way there is danger of burning. *Plant diseases.*—The number of borer trees has noticeably been augmented, but even so borer does not threaten to be severe. Otherwise coffee is looking well. *Labour.*—Sufficient for all requirements. *General Health.*—Fair on the whole. Some fever about, and cases of imported small-pox have occurred. *Interesting Items.*—There was a well-attended Inspection of Volunteers at Mercara on the 5th. The Camp and Race weeks came to a close on the 10th instant.

S. E. Wynaad.

PUNDALUR, 13th April.—*Weather.*—On the 2nd night we had very heavy showers of rain which lasted for about one and a half hours. Since that during the day it is very hot and at nights very cool. *Interesting Items.*—After Mr. Atzenwiler's departure for a change to the Coast the place is very dull. *Biswoo.*—Yesterday was the New Year's day for the aborigines; in this little hamlet there are two temples near the town belonging to the goddess Tamrathunder, the guidance of the Nellyalom palace. From 5 P.M. people from all directions were massing until 10 P.M., and were expecting the Nellyalom Rancee and suite. At 11-20 P.M. the Rancee and suite arrived in a bullock coach well adorned

with bells, etc. As soon as the aborigines heard the arrival, the Badagas with Kurumbers' band went and met the suite with greatest respects; firing of guns, display of fireworks and singing of hymns announced the arrival of the party at the temple. At midnight a Brahmin priest opened the ceremonies by offering poojah. This feast will last until to-morrow. There were several coffee shops, sweet-meat and other bazaars on the premises.

Nilgiris.

KOTAGIRI, 8th April.—Weather.—Too wet. February rains brought out a show of flowers very fair at low elevations, but inappreciable higher up, since when with frequent showers the blossom has been fooling along, coming out irregularly in patches, a more general show being expected about middle of April. The rainfall for first quarter is about 10 inches, as much as we had last year to end of July.

COONOR, 15th April.—Weather—still bright. Coffee men are feverishly anxious. After some grand flushes, tea is inclined to sulk a bit. Railway getting on, slowly, very slowly indeed. A number of estates are changing hands, both coffee and tea. One or two companies are being formed to acquire the best going.

GENERAL NOTES AND ARTICLES.

We learn that the Susan Estate, Nilgiris, recently sold at public auction by Messrs. Oakes & Co., was purchased for Rs. 5,250 by Mr. Thos. Leishman.

Rubber cultivation.

The prospects of rubber planting are by no means brilliant. *Ficus elastica*, the indigenous Indian variety, is estimated to give a return of not more than Rs. 16 per acre in Assam. Ceylon planters have had a dismal experience so far with *Hevea braziliensis*. And even if the yield per acre is double or three times that obtainable from the Indian tree, there are many and long weary years of waiting before the "maiden crop" can be gathered.

Subscriptions.

We had quite a touching enquiry the other day from a would-be subscriber asking us to reduce our subscription rates to suit his pay. This we agreed to do. It has struck us that another way, and more profitable to both parties, could be arranged. Anyone who would rather read this paper than pay for it, can have his copy free, if he secures two other subscribers at the same time. See the point?

Advertisements.

Many of our readers express their huge dissatisfaction with our system of interlarding our advertisements in the reading matter. They cannot quite understand our position, nor the very small amount of choice given us, though if they were all like the correspondent who offered to pay double rates if we relegated all our advertisements to the two ends of the paper, we might meet their wishes. We are doing our best, though, to remove this stumbling block to many would-be subscribers, and in time may perch upon the lofty roof of our office and proclaim that we are altogether clean.

Light railways.

In our last issue we were made to say that the cost per mile of light

railways was £200, instead of two thousand. In connection with this subject, the following clipping from a Home paper will be found of interest:—

A light railway has been constructed under the direction of Mr. A. Percival Heywood for the Duke of Westminster from Eaton Hall to Balderton Station, on the Great Western Railway system, a distance of three miles. Several branches, however, including one $\frac{3}{4}$ mile long to the estate works near Pulford, bring the total length of railway up to $4\frac{1}{2}$ miles. The line, while primarily intended for conveying coal, building material, &c., about 5,000 tons yearly, also equipped for passenger traffic, and as the line passes through the park and across the main avenues, it was built so as not to be in any way conspicuous. The details of design are interesting, though the capacity and the narrow gauge do not fully meet the requirements of such railways as are anticipated in the Act passed this year, yet it is wonderful how much can be carried on a 15 ft. gauge. It has low cost to commend it. The earthworks involve an expenditure of £205 per mile, and the entire cost of construction has been £1,095 per mile, excluding special storage sheds. In this are included some contributions to the beautifying of the line.

Fruit transit.

The latest American discovery which is expected to supersede refrigeration, is the packing of fruit into air-tight compartments charged with carbonic acid gas. An experimental shipment from Sacramento to New Orleans was recently made. The sides of the car were packed in pressed and dried tule (*Scirpus lacustris*), a local swamp rush, which proved entirely air-tight. The substitution of this Californian material for cork, charcoal, and mineral wool lessens the weight of each car from 4,000 to 2,000 lbs., results in the saving of 145 dollars for ice demanded in the case of the ordinary refrigerator cars. After the fruit is loaded the air in the car is exhausted, and the car is then charged with the carbonic acid gas. The fruit arrived in first class order, and obtained top rates in the market. Those interested in the new experiment were delighted with the success of this initial trip, and assert confidently that it settles beyond a doubt the utility and value of their process of preservation as compared with the refrigeration.

Burnt bones.

Bone meal is by no means cheap, so any device to reduce the cost of this valuable fertilizer is well worth noting. It is generally known that practically as valuable a meal can be made by simply burning the fresh bones as have them ground by the manure firms, the 1 to 2 per cent of nitrogen alone being lost. And at about a third of the cost.

The easiest means of procuring the earthy salts of bone (says Dr. Ure) consists in burning them to whiteness; the earthy residuum procured in this manner contains substances which did not exist beforehand in bones, which did not form part of their earthy salts; as, for example, sulphate of soda, produced at the expense of sulphur of the bones and the alkaline carbonate proceeding from the cartilage with which it was combined. On the other hand, the greater part of the lime has lost its carbonic acid. The phosphate of lime contained in the salts is a sub-phosphate consisting, according to Berzelius, of three prime equivalents of the acid and eight of base. Bone manure is more especially recommended in England for light, sandy, or gravelly soils, which disposition would certainly apply to most plantation soils.

EXPERIMENTS WITH NITRAGIN.

So much attention has recently been directed to nitragin that some notes on the first experiments in England will doubtless be read with interest.

These have been conducted by Professor Somerville at the Durham College of Science. Great care has apparently been taken in the treatment of the nitragin, and also that in the cultivation no inoculation should take place from those plots treated to the uninoculated ones.

The results of the experiments are certainly not encouraging. The plots, however, were very small, and we may hope that the more extended trials under the direction of the R. A. S. E. will show up more favourably for the "bacteria."

Peas, broad beans, lucerne and red clover were the crops selected for the experiment. In the case of the peas, the inoculated plot gained, in total produce, to the extent of 6.6 per cent. The remaining three crops yielded less on the inoculated plots than on the uninoculated. The difference in the case of the peas is not outside the limit of error that may occur in any field experiment.

Dr. Somerville states: "These experiments were carried out in a garden attached to the college, in which it may be assumed that peas and beans have frequently been cultivated during recent years. As the soil will thus be well supplied with the bacteria that associate with the roots of these plants, it is not surprising that the application of a pure culture of these bacteria should have been inoperative. But as regards red clover and lucerne, it may safely be assumed that neither of these plants has ever been cultivated in the garden, and the probability is that not a single plant of lucerne ever grew in the garden, or indeed in any fields in the neighbourhood. The conditions, therefore, were to be regarded as distinctly favourable for exhibiting the action of the specific bacteria of these plants, and yet they failed to produce any effect."

Dr. Somerville's experiments have so far been corroborated by the Continental ones.

The commercial form of nitragin is prepared by a firm at Höchst am Main, and sufficient to dress an acre can be obtained for the sum of 4s. 6d. It is of a gelatinous nature and is dissolved in water, which is applied to the feed of the crop, or mixed with dry soil which is scattered over the field. The nitragin should be kept in the dark, and should be liquefied at a temperature below 100° F.

PALMS FOR ESTATES.

TAKEN *en bloc*, the planting community is morbidly alive to the necessity of having more than one string to its planting bow. Individually, it is extremely difficult to find anyone who will devote the slightest time or trouble to solving the question. Which is perfectly natural, and only emphasises our old contention that the crying need of S. Indian planters at least is a series of commercially-managed experimental estates—estates, mind, not gardens.

The title for this paper is "Palms for Estates." There are many which might be introduced in suitable localities with a most gratifying amount of success. First of all perhaps comes the Date Palm, *Phoenix dactylifera*, but our Indian varieties are by no means the best. A writer in the *Indian*

Planters' Gazette, in some interesting remarks on the subject, states that South American seed (say from Rio Janeiro, Pernambuco, etc.) would be far preferable. Sometimes as many as 3,000 fruits are obtainable from one bunch.

As a general rule the date palm lasts for twenty years, commencing to yield in the fourth, if grown for the fruit alone and not tapped; though responding to cultivation and generous manuring it will flourish pretty well if left to itself, merely guarded from cattle and goats by the usual bamboo fascine, until the crown is high enough to be beyond the reach of these animals. The date palm is not likely to thrive, or, rather, mature its fruit, within the influence of the rain belt so that the drier localities only should be selected for its propagation.

The areca palm, commonly called the betel nut tree, is too well known to need any detailed description, and is so familiar that its gracefulness excites but little admiration except among new-comers. This palm affords such slight shade that in coffee it would, for this purpose, be quite useless. On the other hand, it would be planted up on low country tea gardens with perfect safety.

The seed should be obtained, if possible, from trees growing in a limestone formation, as these are free from the canker worm that attacks trees elsewhere.

An acre would contain in round numbers 1,600 plants, the usual income from which is reckoned at 4 annas each, so that the areca is worth attention from a commercial standpoint. The fibrous envelope can be removed by passing the fruit, after being well dried in the sun, between wooden rollers studded with nails, after the pattern of the country cotton gins. If estate owners who care to take up palm cultivation on an extensive scale will go to the expense of importing economic palms from other countries, there are many, the cultivation of which would pay handsomely. The sago, which is abundant in the jungles, is hardly worth attention, for no part of India can compete with the West Indies in this and similar starches, high as is the price of labour there. *Elais guineensis* and *E. melanacca* furnish the celebrated African palm oil, the ripe fruit being crushed and boiled, the oil skimmed and strained.

These are only a few of the varieties that may be cultivated for profit on plantations, but our enumeration, slight though it be, is sufficient to impress on owners the possibilities.

THE RISE IN COCOA.

THE position of this article, which caused great discouragement to producers up to the end of 1896, has since much improved, and, without saying how long it may continue to be so, the tendency of prices of late has been strongly upwards. From the lowest point in November last to the present date the advance in Mincing-lane quotations has been about 6s. to 10s. per cwt., chiefly on the common and middling qualities of Jamaica, Grenada, Trinidad, other British West India, African, and San Domingo. Excepting those of Ceylon and Caracas, few or none of the finest growths now show any improvement in value, and cocoa between 54s. and 64s. remains at nearly the old level of depression. Before the recent rise took place, cocoa was cheaper than it had been for five-and-twenty years previously, and though it may not become still dearer in a hurry, it is the generally received opinion that it can hardly undergo the severe depreciation it did in the past year. Descriptions which were next to unsaleable at from 35s. to 45s. per cwt. are now worth

41s. to 52s., and low defective grades that were disposable only at 25s. to 32s. have recently fetched 36s. to 42s.

The advancing market which has been witnessed this year so far is mainly accounted for by the constantly active demand for exportation to Germany, where the consumption has increased by 50 per cent. within the last year or two. The Germans prefer cocoa to coffee, esteeming the former to be the more nutritious article for their use; and, as the commoner qualities have been best suited to their requirements, anything below a certain figure has been sure of finding a ready sale. Our export trade in cocoa with Germany has therefore been materially enlarged, and, though no detailed official statistics are published, it may be calculated that the amount of cocoa shipped from the United Kingdom to that country is now twice what it was in 1896. The deliveries at the port of London help to prove this statement, for whilst they present the quantity sent to all places abroad during the past nine weeks as near 18,000 bags, the total for a similar period of the preceding year was only a little over 11,000 bags. The consumption here has also progressed at a faster rate than was the case in 1896, the actual clearances out of bond having embraced 32,200 bags, as contrasted with 27,800 bags up to the beginning of March last. The increase of 4,400 bags here shown in so short a time is in great measure due to the larger number of minor manufacturers of cocoa who have sprung up in recent years, the satisfying of whose wants, in the aggregate, has caused a clear addition to the ordinary inquiry that prevailed and was provided for years ago.

It likewise happens that the leading manufacturers of cocoa, who sometimes hold sufficient to serve them for a twelvemonth, have latterly allowed their stocks to run out beyond a safe and proper limit, assuming that the cheapness of the article would be further prolonged, and as they enter the market to replenish their reserves, the competition among the home trade and exporters is stimulated to an unwonted degree, in comparison with what it was in quieter times. By this means a fresh impetus has been given to the upward move in prices, and being based upon sound and legitimate grounds, without the questionable aid of speculators, it is the more likely to be maintained. Another favourable feature for holders is that the landings of cocoa in London since the opening of 1897 have been lighter than in 1896, comprising no more than 48,300 bags, in lieu of 50,600 bags; while the stock in the bonded warehouses, instead of being excessive, as hitherto, is 14,800 bags less than that in the former year; and as no extensive arrivals of Ariba cocoa from Gnayaquil are looked for until July or August next, it is reasonable to suppose that the market will be in a healthy condition during greater part of the season.

CASUAL JOTTINGS.

THINGS seem very dull just now down our way, and all ways. If I were rude enough, I would include your own little "rag". But I'm not. It pained me to see that you passed over without comment the proceedings of the numerous P. A. meetings in your last issue. There was a great deal printed, and a little to read. One point in particular that interested me was the para. in the Wynaad Proceedings about the proper wording of a contract. Some may have forgotten. It was to the effect that the advance should be *recovered by the master* out of wages and *not repaid by the servant*. Otherwise your only remedy is in a Civil Court.

Talking of contracts, and their proper legal wording, I was rather amused the other day. An old planter showed

me his form, which was drawn up in a way that would have made the rawest Tahsildar set the argument, if violated, aside. But the point was that it was *not* violated, and that my friend had not lost a single cowrie from absconding maistries all his planting career.

Another thing too, worthy of comment, even from me, was the proposal at the Coorg P. A. to hold extraordinary meetings for the discussion of the various modes of cultivation. A grand idea, especially if they print the reports.

A backward lead was given by the North Mysore men. Crops being small, the proposed Coffee Association scheme was "sat upon." Quite in the near-sighted planter's style. Prices are high, but there is no reason why they should not be a great deal higher, if we can only induce a freer consumption. Let us hope their logic will improve in good time. Who wants to spend any large sum in promoting the scheme? Push, energy and again push will see the thing through. Every coffee-planter resident in the old country would be an active and willing agent in the great propaganda.

In not a few places there seems to be a great dislike to the idea of individual membership of the U. P. A. I suppose the backbone of the opposition consists in the fear that you cannot get anything done if too many have a finger in the pie. A very sound idea too. But not applicable to the present case at all. Let every planter in South India join and attend the meeting. Let him vote too. Not for details but for measures and for men. Especially the last. After a good free open discussion, in which every single member will have enjoyed his part in the wordy Donnybrook, let a large and representative council of management be chosen for the year. Let it be large to prevent needless heart-burning. While for actual work, let this same council appoint a small committee, who will manage things in very much the same workmanlike manner as they now do. Only with one great difference, that they will always have the thorough confidence of the whole community which they represent. At present, serious jars will probably happen, disagreements which are absolutely impossible to avoid under the present *regimé*.

I came across a copy of the last Annual Proceedings of the Madras Agricultural Society the other day. What earthly use does this Society do to anyone but amateur gardeners? Agri-Horticulture! Be downright, dear M. A. H. S., and call yourself a vegetable and flower-growing association. Its bright example seems to be followed by a similar society lately started on your own Hills, the Nilgiris. Flowers are very nice things to look at, and vegetables are decidedly good to eat. But does it require a Society to grow either?

By the way, why, oh why, Mr. Editor, did you lose your hair so badly with Ceylon, its editors, its planters and its climate? Some of the best and cleverest planters I know hail from Ceylon, and are doing great things in tea at least. Coffee, also, one of them appears to have got a thorough grip of. Rather an open secret, but I suppose everyone knows that the man who is making all our coffee fossils gasp with his new ideas of cultivation is a Ceylon man.

EAL SUOK.

THEORIES BY A NEW HAND.

HUMOUR YOUR COOLY.

Yes, here I am again, and not afraid of tackling perhaps the biggest question that ever troubled owners, managers and superintendents, which reflects less on my pluck than on my head. This is after the manner of New Hands, so it is no use making rough remarks, so as long as you, Mr. Editor, don't smother this in your W. P. B., I'm happy, as also should be my readers, if they have the faintest traces of good taste in them. But I have forgotten my cooly, and how I am to coerce him.

The first thing is to catch him, but I am not writing of the hunting of the snark,—merely how to charm him. Like coercing stubborn horses, there is the rough way and the gentle way. The first has pretty well died out, and a good thing it has, though the latter alone is of no earthly use. A good strong arm adds appreciably to the sweetness of the Doray's smile, when he is enforcing orders which strike the ordered as verging on the unkind. The arm, with a fist or stick at the end of it, need never be used, but the knowledge that it is there, *if needed*, helps Chinna-sawmy to make believe that he almost likes his work. Being a new, not to say young, hand, my feelings towards Chinna-sawmy are very paternal. Somehow the air in a plantation develops the paternal instincts very fast in more ways than one. My great wish has been to train the feelings of this angular, thin-limbed Tamil so as to make him believe that our interests are identical. It may seem Utopian, but in a few cases I almost imagine I have succeeded. First of all, I try and get at the cooly and not his boss, the maistry; this, for various reasons. The most obvious is the one that is embodied in the breaking of the bundle of sticks. If you row a maistry, you are practically rowing the whole bundle, *i.e.*, all his gang, and in a lump the bundle is sometimes difficult to handle. Take him individually, the cooly is accessible to reason, also to other arguments. For the sake of comparison, suppose I put the force, moral and physical, of the planter at 10 H. P. (nominal) and that of the cooly at 1 H. P. (efficient). The odds are ten to one. But if you set your 10 H. P. against even a 25 cooly gang maistry, one cannot always be certain of the result. The maistry, in a manner, funks his coolies just as much as you do; so if you take them one by one and "charm" or otherwise coerce them, it helps him a lot.

I see I have again brought in the word "charm." What charms the average cooly? Many things, but all are not good for him. Easy work will send him to an early grave. Wherefore your paternal instinct must come into play: choose his diet. To do Chinna-sawmy justice, he isn't a bit afraid of hard work, if he can only be got to understand that it will pay him to work hard. As a rule it doesn't. For if he is one of a working gang, his hard work merely relieves his lazier fellow-workers of a portion of their task, so they all try and laze together. A cooly's "kanah" is supposed to be an average day's work for an average man. As a matter of fact it is based almost invariably on the working powers of the (all but) weakest man in the gang. Consequently a very large percentage of the gang can do a great deal more than their kanah. But it is of very little use trying to enforce a bigger task than the usual one.

You must set about it in a different manner. A very simple one too, though it needs careful looking after. Just allow the best and quickest workers, when they have finished their daily kanah properly, to do more work (on contract) on a neighbouring *tundu*. Naturally the simpler this work, the better. The best men will take to this method with great gusto, and do their level best to finish off in time to do another quarter kanah as extra, or "shantosem," work. The first objection to this is that the coolies will simply shirk their day's task in order to get extra pay for their contract work. So they will at first. But you have a powerful hold over them now and can easily check this. Simply forbid the shirkers to do anything more than their ordinary task. It is the stick and sugar-plum principle of paternal government. It is a principle, too, the logic of which the stupidest coolie understands, and moreover appreciates the justice thereof.

He sees you are trying to reward good workers, and, after a time, feels as if the "ma-bap" system, of which so much talk is made but which is so little really felt, is in truth something very comfortable to work under.

To my callow thinking, the "only a nigger" notion so often held of coolies is senselessly wrong. A cooly is a human being, and resents being treated as a dog just as much as we stiff-necked planters object to being "bossed" by Anglo-Indian officialdom. Take him—the cooly—at the lowest point. He is an animal with rudiments of gratitude, faithfulness and honour. These rudiments should be developed. That they can be developed to a surprising extent, I have no manner of doubt, though unless you take it for granted that they do possess these rudiments, all progress is impossible.

Lookers on see most of the game. We planters know the relations of the natives with the Government a vast deal better than the latter. We abuse the officials for their harsh and arrogant, not to say downright ignorant, manner of dealing with their subjects. Does it ever strike us that we too, in our way, suffer from exactly the same failing?

One thing you must remember. It's no manner of use pretending an interest in your coolies if you don't feel it. Natives of this class are as sharp as children in seeing through a sham of the sort.

Some men have the audacity to complain of the ingratitude of a native whom they have had perhaps a long time in their employ. What have they done for him, nine cases out of ten? Simply paid him the usual wages due for the work done. Perhaps a trifle extra now and then to keep him contented and to avoid the trouble of engaging a new man. What cause is here for gratitude? Surely a labourer is fully worthy of his hire. It is indeed wonderful how often, amongst the so-called lower classes, gratitude is shown in such cases. Does his master, the manager or superintendent, feel any gratitude, at the end of say twenty years' service, to the individual or firm who employs him? The converse is more often the case. He grumbles and feels very sore at the ingratitude of his employer for finally turning him off without a pension!

Few will see the logic of the above when applied to the cooly.

To win a man's gratitude you must do a little more than pay him his dues. You must interest yourself in him.

Find out his aims and ambitions: they are very few and small. To gratify them will cost nothing in money, only a slight outlay in kindness. I don't want to begin to preach (*begin?* queries one of my readers); but if there is one investment more paying than another, it is kindness. A kind deed gives the doer as jolly a feeling as a good peg, any day. And as the Englishman in India is supposed to need stimulants, it is sound business to supplement one's whisky with an occasional cock-tail of kindness. For it is decidedly cheaper.

GINGER.

BY J. CH. SAWER, F.L.S.

THIS very widely-used aromatic is furnished by the roots of the *Zingiber officinale* (Roscoe), an Indian herbaceous plant with creeping jointed, woody root-stocks, from which are sent up every year stems surrounded by sheathing leaves arranged in two ranks. Its cone-shaped spikes of flowers are thrown up from the root-stock. The plant is largely cultivated both in the East and the West Indies; also in Africa (Sierra Leone) and in Queensland (Australia). The so-called Chinese and Siamese gingers are identical, but both of them are the produce of another plant, *viz.*, the *Alpinia Galanga* (Willd.). Yet, considering the wide distribution of *Zingiber officinale*, it is quite possible that the true ginger may also be cultivated in some parts of China.

The quality and commercial value of the dried rhizome from different localities varies considerably, being influenced very much by the method of cultivation, collection, and preparation.

Ginger is largely produced in all the warm and moist parts of India, up to an elevation of 4,000 to 5,000 feet. The best pieces of the previous year's harvest are selected and sheltered in a corner of an outhouse; the heap is then covered over with cow-dung to keep the roots from drying up. The land is prepared by ploughing it up two or three times, and then dividing off into beds, with a little raised edge round each bed, care being taken to make openings to allow superfluous water to run off; for if water stands on the crop the roots will rot. Pieces of the roots one or two inches long are then buried three or four inches deep in the soil at intervals of nine inches, and the field is next covered over with the leaves of trees, which keep the soil moist; over the leaves manure is spread to a depth of half an inch; when it rains, the water, impregnated with manure, filters readily through the leaves to the roots. Artificial irrigation is not employed during the rainy season, but after that period it is necessary. During the first three months of the dry season the field is weeded three times. At the end of that time the plants will be about two feet high, having eight fibrous tubers to each shoot; these are dug out and buried in another place for a month. They are then taken up, and if intended for use as "green ginger," are simply exposed to the sun for one day. If intended for dry ginger, the fresh roots are put into a basket, which is suspended by a rope, and two men, one on each side, pull it to and fro between them by a rope attached, and thus shake the roots in the basket; this process is carried on for two hours each day for three or four days. After this these are dried in the sun for eight days, and again shaken in the basket. A two days' further drying completes the process.

In Jamaica (where the finest ginger is produced) it has been ascertained that the soil which yields the very highest quality known in the market is the deep, black soil of the virgin forest; but to grow ginger under this condition involves the destruction of large areas of forest. Magnificent trees six feet in diameter may be seen in some districts lying rotting on the ground, while the ginger cultivators have gone further to the centre of the island. The plan adopted for clearing a forest is for a cultivator to invite a few of his friends to a "cutting match"; he provides food, etc., and the laborious work of felling trees is carried on merrily, and without much expense. Afterwards fire is applied, and the place is burnt over. This burning is considered very important; probably because the resulting deposit of the mineral matters or ash returns to the soil those inorganic constituents which had been abstracted therefrom by the trees. Besides, undoubtedly, the fire also sweetens the ground, corrects sourness, and,

moreover, it destroys insect pests. Some cultivators will grow ginger only in freshly-cleared woodlands, and the next year they move on to a new clearing; but although they get in this way very fine ginger, it is at the expense of forest land. Albert Town was not so long ago a centre for the cultivation, but it seems that growers have already got as far as fourteen miles further inland. Although ginger is an exhausting crop, and growers have been advised not to plant it on the same ground two consecutive years, it can be and is grown in many places a year after on the same ground, but in this case it runs wild—or, as it is called, "ratoons." The "plant ginger" (the produce of planting) is of better quality than the ratoons, which become inferior in each succeeding year. When the ground is too poor to grow white ginger, then the inferior blue variety can be grown.

As regards the application of manure, there is a prejudice against it in the West Indies, some growers maintaining that it breeds worms and that there is a difficulty in getting it in any quantity. It is probable that those who have not succeeded with manure have used it improperly by applying it fresh or not sufficiently mixed with soil. As to obtaining it in quantity, example should be taken from the Chinese labourer, who preserves every particle of matter that can in any way be utilized as manure—not only cattle manure, but decaying matter of any kind, night-soil, etc.; even soapy water left after washing is very useful. To imitate the formation of forest soil, a pit might be filled with alternate layers of bush and manure; everything in the nature of manure or decaying matter should be thrown in, and a layer of soil directly over the manure would be useful. The pit ought to be lined with clay, to prevent the very valuable part of the liquid of the manure from escaping, and a cover of some kind should be placed over the pit to keep out rain. Such a compost, when quite decayed, would be found very useful for refertilizing the soil.

In some part of Jamaica a soil of well-drained clayey loam is selected. The method of planting out is the same as in India (above described). The small pieces of root are set in March or April. The flowers appear in September. When the stalks wither in the following January or February, it is time to dig up the roots. At this period these are fibrous and fit for drying; but if required for preserving in syrup, or candying, they should be dug up before this period, whilst they are still succulent. The mature rhizomes for drying are separately picked, washed, and scraped; they are then dried in the sun and the open air. Occasionally, owing to a very wet season the people cannot dry the ginger in the sun; it then mildews, and the badly cured ginger sometimes found in the market is more frequently the result of this cause than of want of care in curing it.

Dried ginger is called by the dealers "races" or "hands." It is in flattish, jointed, branched or lobed, palmate pieces, which rarely exceed four inches in length. The Barbadoes, Bengal, and African gingers are covered by a dry, shrivelled epidermis commonly called the "coat"; hence these sorts are usually said to be "coated" or "unscraped," whereas the Jamaica ginger and some of the sorts brought from Malabar and Bengal have been deprived of their epidermis, and are, therefore, called "uncoated" or "scraped." The external colour varies in different sorts of pale or bright yellow to dark or brown; the palest sorts is the fine Jamaica, and this realizes the highest price. Cochin ginger resembles it, but is of a pale brownish tint externally. According to some authorities, the chalky white appearance of the so-called "bleached ginger" is produced by submitting the root to the action of the fumes of burning sulphur or by washing it in a solution of chloride of lime; but it is also likely that this appearance results sometimes from a simple application of chalk or plaster of Paris.

The interior of the dried root varies like the exterior in colour; the best is that which cuts pale but bright. The consistence of ginger, as ascertained by cutting, varies from soft to hard, or, as is termed in trade, "flirty," the soft being preferred.

The Chinese ginger (above referred to as *alpinia galanga*) is cultivated in nearly all parts of the province of Kwang-tung. The districts of Nan-hai, which belongs to the city of Canton, produce greater quantities and a better quality than other neighbouring districts. The independent tribe of the Misotsu, in the mountains at the north-western border of the same province are also said to produce large quantities of ginger. In the district of Hsin-hsin about thirty miles south of the city of Chao-ching, on the Western River, three-tenths of the flat land and seven-tenths of the cultivated soil in the hills are planted with ginger. A distinction is made

between the flat land ginger (called in the Canton dialect *Ten-Keung*), which is generally soft and tender, and mountain ginger (*Shan-Keung*), which is brittle and very pungent. This is generally used for home consumption; the Chinese pickle it in vinegar. The expensive *Ten-Keung*—syrup ginger—is almost exclusively consumed by foreigners or exported.

The marked difference between the Chinese preserved ginger and that from the West Indies has been carefully investigated at Kew, with the result that they are now considered to be produce from distinct plants, as above explained.

The plant furnishing "Siamese ginger" is reared in a desultory manner in almost every village, but so little care is bestowed upon the culture and drying that it markets at a very low price in the local bazaars. The best quality is procurable from the bazaars frequented by hill tribes.

The yield of essential oil from various dry gingers ranges from 1.9 to 2.7 per cent. The oil is yellow in colour. Its odour is intensely that of the root—the oil of Jamaica root being the most fragrant—but no variety yields an oil possessing the pungent burning taste of ginger; this taste is due to *gingerol*, the active principle of the root, and exists to the extent of from 0.6 to 1.45 per cent. It can be eliminated in the form of a viscid fluid of a pale straw colour, entirely devoid of odour, and of an extremely pungent and slightly bitter taste. It is very soluble in alcohol, even when highly diluted.

The total imports of ginger into the United Kingdom during 1894 were as follow:—

	cwt.
From India, the Straits, and Ceylon ...	57,922
" British West Indies ...	6,848
" Hongkong and other British Possession ...	1,360
" Sierra Leone ...	14,933
" Various foreign countries ...	4,401
	85,464

Powdered Ginger is sometimes adulterated with rice flour, but this is readily detected by the microscope. A more serious adulterant has lately come into use, namely, the addition of from 10 to 30 per cent. of exhausted ginger, which is practically valueless. This can only be detected by a careful chemical examination. — *Planters' Gazette*.

BEE-KEEPING IN THE KHASI HILLS.

JORHAT.—The following notes are taken from "A Collection of Papers on Bee-keeping in India" which has been kindly lent me for the purpose:—

In the Khasi Hills bee-keeping is practised, writes Mr. S. E. Rita, and the honey both sold and used for domestic purposes. I may mention that I have kept bees for the past two years, and obtained over 30lbs of honey, exclusive of wax, every year. The honey is every bit as good as Narbonne honey. This was the produce of portions of two hives. At first I followed the Khasias' plan of keeping bees. Their hives consist of a small box, about 18 inches square, and the same in depth, kept near their houses under the eaves of the roof. It is a very rude fashion, as when they wish to remove any honey they have to force open the back of the box. They do not destroy or stupefy their bees when engaged in extracting honey; they merely remove them from the comb, as they break it or cut it away from the box. They cover their face only with a thin cloth, usually covering their face with the puggree they wear. As a means of keeping the bees away from their faces they generally chew a little ginger, the aroma of which is apparently not agreeable to the bees, for they appear to keep away. In case of stings, the *pan* leaf is applied to the puncture, which allays the pain almost immediately.

The Khasias do not practise artificial swarming. In fact, they do not know what it is or how it is done. They do not trouble very much about the natural swarms; if a swarm of bees settle close to their abode, they will try and get it. But natural swarming is very troublesome, as when there is a likelihood of a swarm going off a watch has to be kept, and even if one secures a swarm at times, it is very difficult to hive them, the bees not taking readily to their new home. My last experience was that the swarm was hived no

less than five times, and then I lost the swarm altogether. I have shown my new hive, which I got from home, to one or two Khasias in Shillong who keep bees, and advised them to adopt it, but they seem reluctant to do so, although they admit it has several advantages over their system.

Babu Jeebon Roy says:—There are two species of bees in these hills (the Khasi): one is locally called "Lywai" and the other "Ngap". The "Lywai" is larger than the other. It is wild and has never been domesticated. Its hives are generally in inaccessible rocky precipices. In the middle of the precipice it builds its comb, hanging it to some rock in a crevice. Sometimes it selects large and high trees in dense jungle for the purpose. The comb it prepares is flat in form and very large, often weighing more than half a maund. When the people discover the hives, and wish to collect the comb, they drive out the bees by blowing the smoke of a smouldering fire on the hive, on which the bees at once leave the hive. To gather the comb from a hive found in the precipice the joint operation of some six or seven persons is required. Of these three or four persons mount to the top of the precipice by some accessible way, leaving two or three men waiting at the base. Of the persons who have mounted to the top of the rock, one is lowered down in a sling tied on to a stout rope, which is held by the rest of his associates above, or which is secured above to a tree or rock. He is furnished with materials to light a fire for smoking out the bees and to cut the comb, also with a leather bucket tied to a rope for depositing the comb when gathered. After the operation is done, he lowers down this bucket to the men waiting at the base of the rock to receive it, as previously arranged.

The bees of the "Ngap" or the smaller species are not larger than the ordinary flies. This kind exists in the jungle also, but is the one generally domesticated by people in their compounds. The following is the process in which the bees of this species are domesticated and kept in hives. The hive is generally made of a piece of a tree trunk, about 3½ feet in circumference and three feet in length scooped hollow, with an opening at both ends about two feet in circumference. After taking the bees from the jungle, they are put in a hive, and the queen-bee is tied up by a thread or hair for some time to a stick in the hive in order that it may not fly out. When the hive is sufficiently dry the opening at its ends are closed, leaving at one end, however, two or three small holes for the egress and ingress of the bees. The hive is covered with thatching grass as a protection against wet. A year after bees have been put in the hive in the manner above described, the hive is opened and the honey inside is taken out. Subsequent to this the honey is gathered thrice in a year, once in the autumn and twice in the spring. When the rainy season ceases, the bees begin to breed. At this time the hive is cleared of the old comb, in order to enable the bees to build a new one.

The Rev. J. Roberts says:—When the natives find a nest of bees they try to catch the queen by simply searching for it with their fingers, and without having recourse to any stratagem. But if the swarm happens to be of a pugnacious nature, or if the hive is built out of reach, e.g., when it is built very high in the hollow of a large tree, they go through the process of smoking them, but not to the extent of killing them. They drop down one after another in a state of stupor. When the queen drops, it is caught and a piece of string is tied to its wings, when all the rest cluster round her, and the whole hive is taken home.

About the end of May or the beginning of June, when flowers, &c., begin to blossom, a great number of swarms come up from the valleys to the hills and remain there during the warm season; then they return to the valleys for the winter months. The natives, knowing this, make convenient holes under stones, &c., here and there. They then shut them up with earth and stones, leaving a small hole for the bees to enter. The bees when they come up very often find out these holes and enter into them and remain there. In this way a great many of the swarms that come up are caught. Some of the natives have a very sharp ear for the sound of a swarm of bees, even in the hives. In the jungle they follow the direction of the sound without fail to the spot where the swarm is. But the most common way to find a swarm in the jungle is to keep an eye on the leaves of grass and small bushes. If they find the deposit of bees on the leaves, they know that a nest is not far: for the deposits of bees are never found far from their hives. When they find a spot bespattered with the deposits of bees, they go there early in the

morning while the atmosphere is yet clear, to watch the going and coming of the bees, and in this way they never fail to find out the spot and to catch the swarm. Very often when the queen is caught her wings are plucked off to keep her from flying away. But of course this will prevent the swarm from increasing, as the queen cannot lay eggs. The natives have noticed this, but not one of them knows the reason why. When a queen, deprived of her wings, dies from some cause or another, *e.g.*, from going out and not being able to return, it is customary to take a queen from another and a weaker swarm and introduce it instead of the dead one, and if sufficient time (about 18 or 24 hours) be allowed to pass before the introduction of a new queen, the plan is always successful. The kind of hive used by the natives is a hollow piece of wood, about $2\frac{1}{2}$ feet in length and from 10 to 12 inches in diameter. It is hollowed through, and a small door put at each end, one for the bees to come and go, and the other to take out the honey when it is wanted.

It is noticed also that there are no drones among the bees when they come up to the hills in the spring, but on their return there is no lack of them.—*The Planter.*

“HOW PRESERVES ARE MADE.”

In the course of a lecture on this subject, delivered last month at the Grocers' Exhibition, Professor Goodfellow said: There can be no doubt that if it were not for methods of preservation a very vast fruit supply would be lost to the people of the world. The sale of jams and other preserves forms a very large proportion of the weekly sales of the grocer, and therefore it will be appropriate and interesting to follow their manufacture by the aid of the lantern and photographs, and to illustrate the care with which they are prepared. In time past a considerable percentage of jams were adulterated by the addition of vegetable pulp, and samples manufactured from inferior fruit were by no means uncommon. To-day, however, a vast improvement is evident in the quality and purity of preserves, and it is only on rare occasions that samples are discovered which have been adulterated. Generally, the jams of British firms are pure and carefully manufactured, and great strides have been made in their manufacturing processes, securing the retention, to a greater degree, of the natural flavour of the fresh fruit. Jam is universally looked upon as merely a stimulant to the palate, rendering certain flavourless foods more agreeable, and to aid the appetite by making bread more acceptable to the sense of taste. But this view does not indicate the full food value of jam. Jam is prepared from fresh fruit and sugar, and these substances are important items in the diet. Fruit may be regarded as consisting of water, sugar, albumen, fat, fruit acids, salts and cellulose, the water largely predominating. The sugar present is in a most assimilable condition, being ready for absorption by the blood. We may neglect for the present the small percentages of albumen and fat, but the fruit acids and cellulose are very valuable food stuffs. The chief fruit acids are malic, citric, and tartaric, and they perform important functions in the body. In the first place they are anti-scorbutic, counteracting the tendency to scurvy, and they further purify the blood by keeping urates and other waste bodies in solution, facilitating their excretion by the kidneys. A certain proportion of these acids are neutralised during the manufacturing processes, but sufficient remains to make jam a desirable food in this respect. Fruits, too, contain natural phosphates in an available form, and thus help to supply bone, teeth and brain-forming material. The cellulose in fruit forms the indigestible portion, but it must not be regarded as useless on that account. A definite proportion of indigestible matter is essential to good digestion, to give the necessary foundation bulk and to provide a safe and gentle stimulant to the bowels. Cane sugar, with which the fruit is associated in jam, is also a true food. It is converted by certain digestive juices into glucose, and in that condition is absorbed by the blood. Sugar has a most important connection with the liberation of energy in the muscles. The older view of physiologists, that lean meat and other proteids were the sole sources of muscular energy, has been largely modified, and it is now conceded that sugar and other carbo-hydrates are intimately concerned in muscular contraction. Jam, then, quite apart from its palatable qualities, is a good food, and contributes its quota to the nourishment of the body. The popular idea that jam is detrimental to the teeth and stomach is quite wrong. Sugar, the constituent to which this property has been ascribed, is not in itself harmful to the teeth. Bad teeth are generally due to a want

of cleanliness, and sugar has obtained its bad character on account of its proneness to fermentation. In the fermentation lactic and other bodies are produced which, if allowed to remain in contact with the teeth, exercise a harmful action. But if the teeth are properly cleaned no sugar will remain in contact with the teeth for a sufficient period to ferment, and therefore it cannot have any corroding effect on the enamel. In certain jams there is a tendency for the sugar to granulate, and in order to counteract this, a very small proportion of grape sugar or glucose is added to prevent this condition. Much misconception has arisen on this point among the trade and the public. There can be no objection to this addition of grape sugar if properly prepared from the starch. Inferior glucose contains a slight impurity, due to the presence of sulphates, but the jam-makers would not be likely to use it for the sufficient reason that it would spoil the flavour and reduce the value of the goods. The best varieties of glucose are practically free from sulphate. Grape sugar, or glucose, is true food, and, as a matter of fact, more assimilable than cane sugar. I do not, of course, advocate the excessive use of grape sugar for this purpose, but certainly defend the custom of the manufacturers to prevent the granulation and consequent spoiling of the jam. The complete operations in jam making may be summarised very briefly under the following heads:—(1) Preliminary preparation of fruit, (2) boiling, (3) filling and (4) finishing. The preliminary preparation of the fruit includes the picking out of damaged specimens and the removal of stalks and other extraneous matter. The prepared fruit is now ready for the boiling pans. The boiling pans are usually made of copper, the heating arrangements being a steam jacket. The purest cane sugar is employed, the proportions varying according to the kind of fruit. The mixture is boiled until done, and then poured into suitable receptacles for the next operation. In one factory the boiled jam is poured through tubes to large vessels on the floor below, from where it is taken as required for filling out. The jam is now poured into pots by hand, and the surface covered with prepared paper to prevent the formation of mould. The pans are now ready for the final operations of labelling and covering, which are deftly and neatly performed by girls. A very large proportion of the new season's fruit is not, however, manufactured immediately into jam. It is boiled in suitable jars, securely corked and sealed, and stored in suitable rooms. This “pulp” is used as required to supply the steady demand, and if properly prepared keeps good for a long period. Of late years many manufacturers have supplied jams mixed with small quantities of gelatine, which gives firmness and coherency to the mass. Many grocers prepare a large proportion of the jam they require on their own premises. The plant necessary is not large or expensive, and the grocer has the satisfaction of being fully assured of its high quality and purity. Marmalade is prepared from oranges and sugar, and differs slightly in its properties from jam. The orange is richer than the jam fruits in citric acid, and contains in addition certain flavouring bodies and essential oils in the peel. Marmalade, therefore, suits those palates which are not fond of sweet foods, and in addition acts as a tonic to the stomach. No doubt these tonic properties account for the universal custom of taking marmalade at breakfast. The first operation in the marmalade factory is sorting and cleaning the fruit. The oranges are then cut in halves by special machines and the halves pulped. In the latter operation the half orange is pressed against a dome-shaped revolving rasper, which completely and cleanly removes the inside, the juice falling into the receptacle below, while the skins are thrown into a box. The skins in the meantime are cut into fine strips and boiled in water. The object of boiling is to remove the acrid bitter bodies of the peel, which would spoil the flavour of the marmalade. The pulp and a proportion of the boiled peel are now mixed with cane sugar and boiled in steam jacket pans. The marmalade is filled out, and the jars finished in a similar manner to the jam pots. Many manufacturers now prepare a kind of marmalade free from peel, which is replaced by a little gelatine, and to those who do not care for the somewhat bitter flavour of the peel, the new varieties should prove attractive. The Christmas season will soon be upon us, when the shop windows will be attractively set out with candied peel of all kinds, and a short description of the candying process may prove interesting. The lemons are first cut in halves and the pulp pressed out without injury to the peel. The skins are then preserved in brine for about six weeks, after which they are ready for boiling. After boiling, the skins are soaked in cold water to extract the salt, and steeped in cold syrup until thoroughly impregnated with sugar. Hot syrup of a certain consistency and

temperature is then poured over the peels, which after draining and re-boiling are ready for the market. Preserved ginger is prepared from the imported variety in the following way. The ginger arrives in this country in small tubs. The pieces of ginger are first drained, and reboiled in syrup. They are finally crystallised by allowing them to stand in syrup of a certain consistency, when fine crystals of sugar soon form on the surface. When the crystallising action is complete the ginger is drained and is ready for packing. I have now briefly placed before you the main facts connected with the manufacture of preserves, and hope that the knowledge gained to-night will tend to clear away many popular errors regarding jams, and help you to appreciate the great advance which has been made during recent years in jam boiling, and the care bestowed in modern factories in the manufacture of our popular preserves.

LETTERS TO THE EDITOR.

DRY COFFEE SEED: A QUERY.

DEAR SIR,—Will you or your readers please inform me whether coffee seed which is over-dried, with the parchment cracked, is suitable for planting.

I have been advised by my planter friends not to plant it, but the planter who supplied it says he is of opinion that the seed is perfectly good.

Yours faithfully,
SUBSCRIBER.

CREAMING AND SEDIMENTATION OF TEA.

SIR.—I suppose all your readers now know to what the "creaming" of tea is due. But if a tea won't cream, can they tell me how to make it, so that it *will* cream? My tea is not a very grand class of hybrid. Elevation 6,000 feet. Rainfall 50 inches or so. Age of leaf from pruning, twelve months to three months. Wither rather under, roll hard, ferment ditto, firing slow. Tea (dool) "scums" almost at once, but not in the proper clouded or milky way for a cream. Next morning (though kept in shade) the scum is all gone, and the bottom of the cup is thick with sediment. In good creaming teas the cream takes longer to form, and lasts quite 16 hours.

Query: the best way to correct defects of too early sedimentation?

Yours,
NON-CREAMER.

JADOO FOR SUPPLIES.

DEAR SIR,—I have read "Try Jadoo's" letter, under the heading "Jadoo for Supplies", in *Planting Opinion* of 20th March. In reply, let me ask him what is the main difficulty all coffee planters experience in regard to "supplies"? If he is a coffee planter himself, he will, I feel sure, agree with me that the difficulty does not consist in raising a good plant *in the nursery*, to be put out in the field as a supply, but in inducing that same plant to come on, and develop into a healthy vigorous tree, *after it has been planted in the impoverished soil of an old estate*. Does "Try Jadoo" seriously consider that this difficulty would be surmounted by half filling the baskets in which the seedlings are raised with Jadoo? To me it seems obvious that this small quantity would have no practical effect *in the field*. In a very short time after planting out, the roots would leave the basket, and penetrate into the exhausted soil round, with precisely the same result as obtains now—a whippy weakly plant that will never make a robust tree, capable of bearing a good crop. Granting for the sake of argument that Jadoo has all the merits claimed for it (merits which in my view, and judging from the correspondence I have seen, still remain to be proved, so far as coffee is concerned), I maintain that to be of any benefit to supplies, the fibre must be applied *in bulk, after the supplies are*

put out in the field. If Jadoo can then nourish the supplies for a couple of years and induce vigorous growth, the plants may perhaps be able to fend for themselves. For such an application, the $\frac{3}{4}$ peck (not $3\frac{3}{4}$ pecks as "Try Jadoo" says), given in the prospectus as the amount for each plant, would not be one whit too much, seeing it only represents $\frac{3}{16}$ bushel. But even this quantity means an outlay of 9 annas per plant, an absolutely prohibitive price. The only real solution of the difficulty in regard to cost is the one you suggest, Mr. Editor, in the same issue of your paper, viz., that the fibre should be manufactured locally. Coir would probably do quite as well as peat moss as a basis. This is cheap, and its employment would save the heavy freight from home. There would then remain cost of chemicals, cost of manufacture, and manufacturer's profit, and the fibre could be retailed at a price which would allow planters to use it in sufficiently large quantities. In the hope that the Company, if floated, will adopt this course, I sincerely trust the capital they ask for may be subscribed.

As to the value of Jadoo Fibre in nurseries, we have the testimony of Mr. G. H. Green, of Callendar Estate, Ohiya, Ceylon, in this same issue of *Planting Opinion*. He has evidently given it a fair trial, and this is what he says: "As regards tea nurseries, I put some into old nurseries which had been replenished with good black jungle soil, with the exception of the piece containing the fibre. I found there was not much difference in the growth of the plants, any slight difference being in favour of the fibre," which opinion is surely damning Jadoo with faint praise. The next experiment, in which Jadoo brought the seedlings on "nicely" in "very bad soil", seems to show that it *would* be of benefit to supplies if applied in bulk in the field. My own experience with coffee is on all fours with Mr. Green's, viz., that Jadoo *versus* good shola soil (with a little cattle manure in my case) is an even race. Last December a planter I know germinated a lot of seed in planting baskets half filled with Jadoo. My seed was germinated at the same time in planting baskets filled with good shola soil and cattle manure. As far as I can see, there is absolutely no difference in the present appearance of our respective nurseries. I admit it is too early to judge with any degree of certainty, and I intended, if possible, to have another look at this Jadoo nursery about the beginning of June.

TODA.

IMPROVED COFFEE SEED.

I.

DEAR SIR,—In your issue of 20th March, Mr. L. W. Grey, of Pykara, tells us that while disclaiming any wish to "crack up his own pullet," his supplies, grown from "*his seed plant*," (the italics are his own,) and put out in the field in June—July 1894, are "five to six feet high and sturdy, healthy, &c." I can only exclaim "Wonderful!" As he has been good enough to afford us this information, will he put us under a further obligation, and tell us why he allows his supplies to reach a height of "five to six feet"? Is he a believer in the native system of growing coffee? Like Rosa Dartle, I "only want to know" you know.

AJAX.

II.

SIR,—With regard to Mr. Grey's seed, the seed it is stated contains 7% of ash with the parchment, but only 3.71% without. From this it is evident that almost half the percentage of ash is contained in the parchment. In reply to "Bet's" query, published in your issue of the 6th March, asking the advantage of obtaining seed possessing 7% of ash, Mr. Grey refers him to P. O. Nos. 2 and 3, pages 70 and 104. In P. O. No. 2, all I can find written in support of "Mr. Grey's extraordinary seed" is that "the increase of ash would probably" improve the germinating power of the seed

and so make a vigorous plant. Also "the potash and phosphoric acid in this ash would afford the first food for the young plant and give it the necessary start in life that it requires." These statements are made by Mr. Hooper, a chemist of some standing and a botanist of no mean order, and may therefore be accepted as undeniable. What follows necessarily hinges upon the answer to the following question: "When a seed containing a parchment, such as that of coffee, is put down in a germinating bed, does the parchment in any way assist towards contributing sustenance to the seedling?" If it does, then, as is very obvious, Mr. Grey must be congratulated on having introduced his seed into the market. Under these circumstances may he reap his well-deserved reward. But on the contrary, if the parchment does not in any way affect the growth of the coffee seedling, then of the 7% of ash contained in Mr. Grey's seed, 3.29% is, according to Mr. Hooper's analysis, so far as the seedling is concerned, waste matter because the plant does not benefit by it. This reduces the available percentage of ash contained in "Mr. Grey's extraordinary seed" to 3.71. Again Mr. Grey asserts that ordinary coffee seed contains only 2.6% of ash. This is in accordance with what Mr. Hooper, basing his statement on his analysis of Mr. Grey's ordinary seed, says. We have, however, reason to believe that Mr. Grey's ordinary seed was of poor quality for the following reasons: 1st, Because, as mentioned by P. O. of the 23rd January, figures given in Mr. Cochran's Ceylon Manual of Chemical Analysis, show that "raw" coffee (presumably minus both parchment and silver skin, as it was tested against roasted coffee) averages about 4.40% of ashes, some being as low as 3.97.

2ndly, If Mr. Grey's sample of ordinary coffee is to be taken as a fair sample of ordinary coffee all over Southern India, then "Coffee Planting" in S. India must be in a bad way. For what does Mr. Hooper (P. O., 23rd January) say: "The ash of No. 2 sample (Mr. Grey's ordinary coffee) is very poor, and is likely to produce a weak seedling and a poor plant liable to the attack of any disease . . . etc., etc." Again "the absence of this stimulus (i.e. potash and phosphoric acid) in No. 2 would be productive of a famine-stricken coffee bush, especially if it were planted in poor soil." In conclusion, let me state that I have seen many coffee nurseries and many coffee estates, but that amongst these "weak seedlings," "poor plants" and "famine stricken coffee bushes" have invariably been conspicuous by their absence.

I find on referring to P. O. No. 3, that Mr. Hooper in a supplementary report says:—"The moisture of the two samples of coffee was in the prepared sample 9.20% and in the original 10.73%. Making allowance for this water in calculating the ash on the absolutely dry coffee berry, the ash only just reaches 3%. This is decidedly low and much below the average yield of ash, which is about 4% in dry coffee." I presume that in the above "prepared sample" should read "extraordinary coffee seed," and original sample "ordinary coffee seed." If so, upon which of the samples is the calculation made?

"I."

March 31st, 1897.

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma contains per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.63	"	Phosphoric acid.

Orders booked for the coming crop of seed from the parent trees of above analysis at Rs. 3 per 1,000.

Manager, ARIENKOW ESTATE,
SHENCOTTAH,
Tinnevely.

COFFEE.

LIBERIAN COFFEE IN MALAYA.

IN South India the cultivation of this variety is still engaging, despite some most disheartening failures, the earnest attention of planters situate in districts where Arabica seems utterly played out. Perhaps in no part of the world has Liberian coffee succeeded so well as in Malaya. So a brief description of the condition and modes of culture obtaining there may be found of practical interest.

First of all the climate. The heat, it need scarcely be pointed out, is tropical, and warm at that. It is also decidedly moist, the average rainfall being between 90 and 100 inches, very evenly distributed; the greatest fall being 11 inches in October, and the least being just under 4 inches in June. The soil best suited for coffee, and found in abundance in the coast districts, is exceedingly deep, rich, and fairly friable. As a rule it is distinctly poor in lime. The favourite planting season is in the time of heaviest rainfall, i.e., April or October. The methods of sowing the seed seem very similar to the usual ones obtaining elsewhere. Germination previous to planting out in the nursery is preferred to direct sowing. A favourite treatment for leaf disease, which almost invariably attack the young plants in the nursery, is a solution of lime and sulphate of copper: two of the former to one of the latter, water according to severity of attack. Transplanters are in universal use, the commonest being a circular brass tube about nine inches long and three in diameter, surmounted by a long iron handle connected with each side of the tube. This tube is put over the top of the plant and forced downwards to six or nine inches below the surface. On being lifted upward, the plant comes out with an inch and a half of clean cut earth all round it. If the plant is six months old, and healthy, there will be an inch or more of tap-root extending below the soil, and this fragment must be cut off before the plant is taken to the field. The plant is pressed out of the transplanter and carried away (with others) in a box or basket, the soil still adhering to it. If the soil is inclined to crumble, dip the transplanter into a pail of water after extracting each plant. On arriving in the field they are distributed to the planters, who should scoop out a hole of sufficient size to admit the plant with its block of nursery soil; set erect in the hole, earth must be scraped together and pressed firmly around it.

For shading the young plants out in the field, ferning is not practised, the only things used being two flat stakes on either side of the plant. Permanent shade trees are generally planted up, the favourites being Ingasaman, Dado (a poor relation of our friend, E. lithosperma) and Albizzia, the last two being extremely quick-growing. Crops begin in the third year with about 2½ cwt., going up to 7 cwt. in the sixth and succeeding years. The value of the coffee locally, is fifty dollars or so per cwt. From blossom to crop there is a lapse of about eleven months.

The Ceylon system of pruning is followed, says a writer in the *Straits Budget*, in a modified form. "Local experience, however, has persuaded us that the Ceylon system in its entirety is too thin for our climate. We have more sun in Malaya, and consequently require a thicker tree. As a general rule, the tree is grown from one stem, but the result of an experiment of growing the tree from three stems—an experiment conducted over several hundred acres—has

produced such favourable results that we venture to predict that the several-stemmed tree will become more popular.

"If it is proposed to keep the trees low, pruning will first occur from eighteen to twenty months after planting, when the top of the tree will be cut off at from 5 feet 6 inches to 6 feet 6 inches from the ground. Suckers will be cut off flush with the tree (unless it is desired to re-develop the tree from a well-shaped sucker to increase the number of stems) and the centre of the tree kept clear, so that all the branches can freely grow outward. Like the suckers, all timber so pruned should be cut close to the trunk or branch from which it springs. It is a generally accepted rule that all fresh shoots within a handspan of the trunk ought to be removed; but, if you grow your tree from three stems, the tendency to send out fresh wood from the centre will be lessened. All dead wood should be cut back as far as the first living eye."

The chief manures used are much the same as in India, with the exception of Bat Guano, which we doubt not also exists in India.

The trees are planted, as a rule, ten feet by ten feet.

COFFEE.

Gautamala.

H. M. Minister in this country estimates last year's crop at 600,000 quintals, value about £800,000. It is interesting to note that the comparatively high prices enjoyed by Gautamala coffee is due entirely to the careful cultivation, plucking and curing in force.

Brazilian coffee.

The *Rio News* states that the work of setting out coffee trees in the municipal district of Ibitinga, S. Paulo, is progressing rapidly. There are now estimated to be about 2,000,000 coffee trees in that district. At Santos a committee of merchants estimates the next coffee crop for that port at 3,500,000 bags, and the quantity, belonging to the present crop, still to be received up to June 30, at 1,000,000 bags. The shipments of coffee in 1896 at the port of Santos were as follows:—From the State of S. Paulo, 3,817,258 bags; from the State of Minas Geraes, 237,810 bags: total, 4,055,068 bags. The official value of this coffee was 274,707,370\$314.

Liberian coffee in Travancore.

A well-informed correspondent tells us some very disheartening news of the recent threatened collapse of this variety in South Travancore. The oldest coffee (some 15 years' old or so) was, we understand, planted in long narrow strips by the banks of a stream. The jungle on either side of the coffee (which was not shaded) was left standing for a considerable distance on either side. Until quite recently the coffee did excellently well. Lately the sheltering jungle was cut down and planted up, with the almost immediate result of the cessation of crops on the old coffee. Other Liberian coffee also originally planted in the open, though at first coming on very well, appears to be now stricken with a sudden collapse. We should be obliged for the fullest particulars of the above case, as it is possible most valuable lessons may be learnt from this failure of Liberian in Travancore.

Albizzia fastigiata.

Central African coffee-planters have been long on the look out for a good shade-tree. They have heard of the "coming champion," *E. lithosperma*, and its vogue in South India, and have cast longing eyes on it. The danger of importing leaf disease therewith has alone prevented from a trial. They have tried many and various trees, among these blue-gums, and at last have hit upon an excellent indigenous variety, the *Albizzia fastigiata*. Mr. Brown, the "discoverer" of the tree, says that it is a coffee fertilizing tree and experiments have proved that "it possesses peculiar properties in bringing round exhausted soils, thereby causing coffee which has been worn out by age and cropping to renew its vitality and again become productive." The tree affords moderate shade sufficient to prevent evaporation, but not sufficient to shut out the light altogether. Not only is the benefit to be derived from light shade in this tree valuable, but some chemical process due to the roots has a most striking effect on coffee.

Green-manuring "ad absurdum."

Properly carried out, green-manuring is perhaps the best and cheapest form of fertilizing the land known. But some men seem to lose their heads over it altogether. We are personally acquainted with a planter of sorts who refuses to weed his coffee at all. On the principle that as land always improves under grass, the more grass under the coffee, the more liberally will the coffee be fed! We put this down charitably to simple lunacy. But from an African exchange we note the same sort of madness has infected some of the Nyassaland planters. One man has actually imported a grass of densely matted root-growth to plant in his coffee, in order to prevent wash. He will no doubt be entirely successful in obtaining a fine dense sward, with nothing but a few old coffee stumps to break the smooth lawn-like expanse.

Yet as some infatuated ones will hold that sneering is no valid argument, a few plain words may be useful. Coffee obtains 90 % of its food from the surface. Grass obtains all its food from the surface. It becomes a question of the survival of the fittest; one must die that the other may live. Allowing weeds to grow in the monsoon; i.e., the time of the heavy rains, is quite another matter, and is based on quite a different principle. During the whole of the preceding hot months, an abundant formation of nitrates has taken place. Unless temporarily caught up by weeds, these nitrates are simply washed out of the soil. The rains over, weeding can, and should, be proceeded with as quickly as possible and the weeds buried in shallow trenches or pits. It is obviously impossible to do this with grass.

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.

(SOMETIME AGRICULTURAL CHEMIST IN COORG, SOUTH INDIA,
TO MESSRS. MATHESON AND CO.)

[Reprinted from the "*Madras Mail*" by the kind permission of the Editor.]

THERE exists such a general desire on the part of our readers to preserve the writings of the late Mr. Pringle

that we have decided to reprint the whole series in our columns. Planting science moves very slowly, and we doubt not that a great deal in Mr. Pringle's writings is still of as absorbing interest as in 1891, when the series was first commenced.

A few copies will be printed in pamphlet form, at Rs. 1-8 per copy: applicants should register their names with *Messrs. Addison and Co.*, Mount Road, Madras.

I.

THE ART OF MANURING.

The question of manuring coffee has had little systematic work spent on it compared with the vast interests at stake. Most planters have been content to use such manures as were most readily attainable, without bothering their heads as to whether or not they got an adequate return for the money spent on them. I have known live rubbish carted five miles—it could only in very rare instances be worth the cartage.

Selection of manure. In selecting a manure to be used on an estate we should be guided by the analysis of the soil, as well as by our knowledge of the composition of the coffee shrub and its requirements. One glance at the annexed analysis of three South Coorg soils will show that they require very different treatments:—

	Parts per hundred.		
	A.	B.	C.
Organic matter and combined water*	9.530	8.080	5.475
Oxides of iron and alumina	13.065	6.861	7.844
Lime	.522	.120	.380
Magnesia	.396	.446	.101
Potash	.044	.127	.042
Soda	.019	.063	.020
Phosphoric acid	.135	.039	.122
Sulphuric acid	.128	.079	.013
Chlorine	.003	.001	.002
Insoluble silicates	76.158	84.184	86.001
	100.000	100.000	100.000
* Containing nitrogen	.143	.292	.089
Equal to ammonia	.174	.355	.094
Moisture in air-dried sample	3.24	12.13	1.78

On A and C the great object should be to conserve the moisture by shade, and the use of as much good cattle manure, made by bedding the cattle with leaves and ferns, as possible. Both are rather short of potash, and one cwt. of nitrate of potash (nitre) per acre should be added to the manure; this will supply nitrogen as well as the potash, and C is very short of that most important element. A requires nitrogenous manures with potash, but a little bone phosphate should be added to prevent soil exhaustion. The following manure is recommended:—2 cwt. bone meal, 1 cwt. nitrate of potash. This should be mixed with 1 cubic yard of burnt earth or 2 bandy loads of cattle manure. It would be a sheer waste of money to apply lime to such a soil. B is very short of phosphoric acid, so bones in fine meal will be the best manure; 4 cwt. per acre will be enough, and lime may be used with advantage six months afterwards. To use oil cake as a manure to such land would be a pure waste of money. Lime used before the phosphates have time to act would lead to the rapid exhaustion of the land. It is a case where the indications of the analysis are very clear. On such land ammoniacal manures used without phosphates would never produce any results commensurate with expenditure, and would do more harm than good. The land as shown by the moisture is very retentive; drainage is therefore a necessity if the coffee is to be kept healthy. Over such land the shade may with advantage be

kept very light and thin. C, on the other hand, is a poor sandy soil, greatly wanting in moisture; shade should be kept thick, and leaf mould will render great assistance in retaining the moisture; cattle and organic manures will also give results beyond their mere manurial value on such land; in fact, on such places cattle manure is invaluable. For it are wanted cattle manure 2 tons with 1 cwt. fine bone meal, 2 cwt. pure dry fish, and $\frac{1}{2}$ cwt. nitrate of potash per acre.

These examples show how we may be guided in our choice of a manure by the soil analysis, and that a knowledge of the power of the soil to retain moisture will assist us in regulating the shade and decide many vexed questions of the best methods of cultivation to be followed in a given case. The system of cultivation that might be successfully worked on B. would not answer on C., for the whole treatment required is different, also the manures. So far I have mentioned, as coffee manures, cattle manure, bones, oil cake, and fish. Now let us examine these materials and see what we are dealing with. Cattle manure is first on the list. Its effects are as much mechanical as chemical, and where it has shown the best results I have generally found the soil possessed a very poor power of retaining moisture as in analysis C. Where cattle are kept solely for manurial purposes, cattle manure is very costly and does not always pay; when made by working bullocks it is a bye product, and often represents the sole profit on their keep. If it were not, it would often be just as cheap to hire bandies for the estate work. The actual cost of the upkeep of a bandy and bullocks in Coorg District is Rs. 23-15-4 per mensem. In full work the bullocks and bandy earn Re. 1 per day, and if they work 24 days out of 28 the profit is only 8 pice plus the manure. These two bullocks produce in 28 days 1,491 lbs. of manure, having the following composition when air dried:—

	Parts per hundred.	
	...	...
Moisture	...	7.94
Organic matter and combined water*	...	58.92
Oxides of iron and alumina	...	1.18
Lime	...	1.78
Alkaline salts	...	1.22
Phosphoric acid	...	.88
Insoluble matter, &c.	...	28.18
	...	100.00
* Containing nitrogen	...	.539

Fresh manure contained moisture 73.99 per cent. The dry manure is worth at the most for the manurial ingredient contains Rs. 8 per ton, the manure in its natural state about Rs. 2. Well bedded with bracken fern it may be assumed as an outside estimate that a pair of bullocks will produce one ton of manure, worth about Rs. 2 per ton.

The following is an analysis of a first-class cattle manure produced by bedding gram-fed cattle with bracken fern. The sample was taken in March and appeared quite dry; when powdered it looked just like brown-snuff:—

	Parts per hundred.	
	...	...
Moisture	...	25.83
Organic matter and combined water*	...	55.23
Oxides of iron and alumina	...	1.11
Lime	...	1.50
Magnesia	...	.86
Potash	...	.89
Soda	...	.41
Phosphoric acid	...	.55
Sulphuric acid	...	.13
Chlorine	...	.24
Insoluble matter, sand, &c.	...	13.25
	...	100.00
* Containing nitrogen	...	.49
Equal to ammonia	...	.60 per cent.

Such a manure is exceedingly valuable on poor sandy soils, but is too short to be of much use in opening of heavy retentive lands, which require horse manure and straw litter to do good. Cattle manure should never be burnt, as its most useful character, its mechanical condition, is thereby destroyed, and it sinks to the value of wood ashes or less. We have seen that the manure is costly to produce. It is equally costly to apply.

The following table shows in lbs. what 10 tons first class gram-fed cattle manure in its natural state, containing 75 per cent. moisture, will yield. Many samples of cattle manure contain as much as 85 to 95 per cent. moisture; other samples are hardly cattle manure at all, being chiefly composed of lines' sweepings and other rubbish of little or no manurial value.

Comparative value of manures. The table also shows the quantity yielded by bones, fish, and oil cake:—

		lbs. per acre supplied by			
		10 tons cattle manure.	4 cwt. raw bones.	4 cwt. pure fish.	4 cwt. oil cake.
Tri-calcic phosphate...	...	67	226	180	5
Ammonia ..	...	34	18	31	27
Potash ..	...	50	4	7	6
Lime ..	...	49	3	32	1
Sulphuric acid ..	...	7	...	...	...
Total ..	...	207	251	150	39
Cost ..	* Rs...	120	13½	9½	11
Cost of application ..	...	30	5	5	5
Total Rs.	...	150	18½	14½	16

* If the bullocks do not work, gram-fed cattle manure of that quality cannot well be produced for less.

Cost of application.

Should the amount put down for the application of cattle manure appear excessive; let the questioner work out the problem on the supposition that there are 1,200 trees per acre and that one basketful is given each tree. Each basket has to be filled, the distance to the tree and back traversed, and the basket emptied. Suppose that the coffee is moderately thick, and that the roads are 100 trees apart, then by the time the cooly has reached the fifty-second tree, it will be found that he has manured the twenty-third part of an acre and walked three miles. Taking the filling and emptying of baskets into account, he will seldom walk a mile per hour. At such work a cooly would consider 100 trees a hard task, and certainly it would be from 10 to 20 times as hard as putting out 4 cwt. of manure mixed with 1 cubic yard of burnt earth. The cost of application entered under bones, fish, and oil cake includes the cost of preparing 1 cubic yard of burnt earth and mixing it with the manure. This was given me by several managers as Rs. 2 and for application Rs. 3. So that taking cartage, &c., into account, it is not safe to estimate less than Rs. 30 per acre for cattle manure. In Ceylon, where cattle are often kept solely for manurial purposes, the cost is seldom much under Rs. 100 per acre, and with scanty grazing ground of the Coorg District it would be difficult to produce any quantity of cattle manure, and the small quantity produced, if the animals are well fed and bedded, cannot well be made under Rs. 12 per ton. Thus, except in the case of working bullocks, cattle manure of first-rate quality may be dismissed as too expensive for ordinary use, and we must look for some other manure.

Fish manure.

We find in good pure fish the cheaper native manure, where first class manure and oil cake, *i.e.*, castor hindy, may be looked upon as expensive luxuries, only to be indulged in where the poverty of the soil demands the use of an organic manure. Bones decompose very slowly in the Coorg District, and steamed bones

are preferable to raw on that account. They would also be in the finest meal possible if an immediate return for the money spent is expected. The use of inch bones in South Coorg might be termed manuring for posterity, as this generation will reap little benefit from them.

What coffee takes up. The coffee tree is not greedy; it does not ask for a large supply of food: a fair average tree at the end of the hot weather weighed 20 lbs. and had 17 primaries and 2,500 leaves. Such a tree will yield 5 cwt. of coffee per annum with its accompanying pulp.

Materials removed by	5 cwt. coffee.	Pulp.	Leaves.
Tri-calcic phosphate ..	4 lbs.	1	41
Ammonia ..	10 "	2½	135
Potash ..	9 "	6	101
Lime ..	2 "	1	90
Sulphuric acid ..	½ "	½	11

Valuable experiments.

The amount of material taken up by 5 cwt. coffee is very small. That removed by the leaves and prunings is what requires to be replaced by manure. As they decompose very slowly, the soluble salts yielded by them are lost in the monsoon rains and wash. The plant food is not there when the tree requires it to develop its fruit. Looked at from this point of view we must have in a manure that has to be applied at the end of July or in August all the plant food in an easily assimilable form and provide fully for the plant's wants. On this basis a coffee manure should have 40lbs. tri-calcic phosphate, 140lbs. potash and other manurial matters in proportion, if the tree has to depend on the manure alone for the supply of plant food. But the soil by slow decomposition and disintegration is also supplying food, and the tree appears to be capable of taking up ammonia, or some form of nitrogen compound from the air through the soil by its roots. The great question is what is necessary and how much? To help in the settlement of this question, I submit the aggregate results of some of my experiments giving the weight of clean coffee yielded. The results of 1889 and 1890 are added together in the following table:—

	4 cwt. yield lbs. per acre.	8 cwt. yield lbs. per tree.	4 cwt. yield oz. per tree.	8 cwt. yield oz. per tree.
Bones ..	833	752	13.77	12.84
Bones and fish ..	783	818	12.14	13.12
Fish ..	553½	655½	9.90	11.93
Superphosphate ..	759	794	12.34	11.11
Mineral phosphate ..	910	920	13.84	14.90
Ammonia sulphate ..	983	712	16.39	12.33
Potash nitrate (nitre)...	813	998	13.38	16.79
Super and ammonia ..	713	744	11.41	14.34
Super and nitre ..	773	834	13.05	12.23
Minerals and nitre ..	648	793	10.45	13.84
Kanite (potash salts) ..	607	544½	9.18	9.02
Average ...	761	779	12.35	12.95

The average yield from the 4 cwt. of manure is the same as from 8 cwt. practically speaking; at any rate, there is not sufficient difference to pay for the extra manure used. The results were also most entirely controlled by the shade; where it was, there the results were good and *vice versa*. This was particularly noticeable in the case of ammonia sulphate, where 4 cwt. yielded so much better results than the 8 cwt. One of the 8 cwt. plots was under dense jack shade, and the results were remarkably poor, worse than an unmanured plot not thirty yards off where the shade was thin. As regards nitre, the 8 cwt. had the advantage of the thin shade and the results are just the reverse of the sulphate of ammonia. Bones present a very curious illustration of the great effect of shade. Four cwt. gave 13.77 oz. per tree and 8 cwt. only 12.84 oz. When 4 cwt. of bones, the yield was only 13.12 oz., considerably less than when the bones were used alone. There was only one-twelfth of an acre, 100 trees on each of three estates, or a quarter of an

acre in all under each quantity of each manure, and on these small plots shade has had the power to mask and control the results; but in the aggregate they show that under shade 4 cwt. of manure will produce as good results as 8 cwt., and it is evidently folly to use more.

(To be continued.)

HIGHLAND COFFEE OF SIERRA LEONE.

(*Coffea stenophylla*, G. Don.)

THE Highland Coffee of Sierra Leone (*Coffea stenophylla*) is an interesting plant, as being, according to the *Botanical Magazine* t-7475, "one of the two indigenous West African species which in point of commercial value may prove a formidable rival of the Arabian coffee." It was discovered by Afzelius upwards a century ago; but was not published until 1834, when G. Don described it from specimens collected by himself at Sierra Leone. Sir Joseph Hooker remarks:—"It was regarded by Bentham, perhaps rightly, in the 'Niger Flora,' as a variety of *C. arabica*."

The plant is an evergreen shrub or small tree up to 20 feet high; youngest leaf-shoots are pink. Leaves four to six inches long by one to one and a half broad, bright green and glossy above, paler beneath; nerves, six to ten pairs, with small glands at the axils, which are white, and perforated on the upper surface. Flowers large, white, one to one and a half inches across the corolla lobes. Berry half-an-inch in diameter, globose. Seeds hemispheric, with a narrow ventral furrow.

It owes its name, "The Highland Coffee of Sierra Leone," to Dr. Daniell.

Mr. G. F. Scott-Elliot, F.L.S., the botanist to the Anglo-French Boundary Commission, in 1892, also collected specimens, which are now in the Kew Herbarium. Sir Joseph Hooker remarks that these are of a very slender shape, with lanceolate leaves only two to two and a half inches long by one-third to two-thirds of an inch broad, very different from those represented in the accompanying plate, "and these together favour the opinion entertained by Bentham, that both are forms of *C. arabica*, Linn."

Mr. Scott-Elliot's account (*Kew Bulletin*, 1893, p. 167) is as follows:—

"*Coffea stenophylla*, the narrow-leaved 'wild,' 'bush,' or 'native coffee', is sometimes found wild in the hills, and is more often cultivated than the Liberian. It grows very freely, and yields quite as much as the Liberian, but is somewhat longer in coming into bearing. Both the natives and French traders at Freetown say that it has a superior flavour, and prefer it to the Liberian. In fact, latterly a certain amount has been exported to a French dealer, who is said to sell it at 4 frs. 50 cents a lb. as 'best mocha.' Considering that it is worth at Freetown 6d. a lb., this should be a fairly profitable trade, and a trial shipment should be made by the English merchants to find out exactly what the market value in Liverpool would be. The plant appears to thrive best in the higher hills about Sierra Leone on gneissose or granitic soil and can be grown at from 500 to 2,000 ft.

The plant, from which the accompanying plate was produced for the *Botanical Magazine*, was raised at Kew from seed sent in May 1894 by Sir William H. Quayle Jones, late Chief Justice of the West African Settlement and Deputy Governor of Sierra Leone.

The circumstances under which the seed was collected is given in the following despatch communicated to Kew by the Colonial Office:—

Deputy Governor, Sierra Leone, to Colonial Office.

Government House, Freetown, Sierra Leone.

April 10th, 1894.

My Lord Marquess,—In reply to your Lordship's Despatch, No. 15, dated the 23rd January last, transmitting a copy of a letter from the Director of the Royal Gardens, Kew, asking that a few pounds of fresh and authentic seed of *Coffea stenophylla* may be obtained and transmitted to him for distribution to the botanic stations in the West Indies, which request your Lordship desired should be complied with if possible, I have the honour to report that on the arrival of Mr. Crowther, the curator of the Gold Coast, in the Colony, I inquired what was being done in the matter, and on learning that it was said to be too late to obtain seed, and as authentic seed was required, and we have no expert in the Colony, I asked Mr. Crowther to be so good as to endeavour to obtain some

seed, and if it was not possible to do this now, to be good enough to ear-mark some of the coffee plants of the authentic kind, so as enable us to supply authentic seed when obtainable.

I am glad to say that Mr. Crowther was able to obtain some of the seed required (nine pounds), which he certifies as true seed, having seen it growing before it was gathered, and also gave instructions for its being packed.

The coffee is being addressed to the Director, Royal Gardens, Kew, and will, if possible, be despatched by s.s. "Sherbro," which takes this despatch.—I have, &c.

(Signed) W. H. QUAYLE JONES, Deputy Governor.

The Most Honourable the Marquess of Ripon, K.G. &c. &c.

Plants raised from the seed, above mentioned, flowered at Kew early as September 1895, in one of the tropical houses. Supplies of seed and plants of this coffee have now been distributed to the Botanical Institutions in India and the colonies from whence, if the plant resists the coffee disease and proves to be as excellent a coffee as the French merchants declare it to be, good results may be expected.

The results of the introduction to the West Indies are so far of promising character. The plants have not, however, thriven so well as could be wished at Dominica and Ceylon. In the *Report of the Botanic Station at Dominica for 1895* it is stated:—"A few plants of *Coffea stenophylla* were planted at the station, and twenty plants distributed in couples to various planters who expressed a desire to try them. Some are reported as thriving well; others are not satisfactory. The plants put out at the station are by no means successful as yet, one only being in a really healthy state."

From Trinidad the prospects are more encouraging. In Mr. Hart's *Annual Report for 1895* we find:—"From seed of this new coffee sent from Kew, a number of plants have been raised. Some of the larger plants have been planted in permanent positions, and are now over three feet in height, and it is expected will flower in a few weeks for the first time."

At the Castleton Gardens, Jamaica, Mr. Fawcett is able to report:—"Fifteen plants of *Coffea stenophylla* raised from seeds from Kew have been planted in different places about the garden and are doing well." From the *Report of the Director of the Royal Botanic Gardens, Ceylon, for the year 1896*, we learn:—

"A small plantation of 36 plants of Sierra Leone or 'upland coffee' (*Coffea stenophylla*) received from Kew in 1894 was made in April, and plants of *Lonchocarpus* sp. (the one used in Trinidad as a shade tree for Cacao) planted among them for shade. The growth of the coffee plants has been very irregular, varying from a few inches to 3 feet, and cannot be said to be very promising. They have the appearance of plants out of their element, and look as if the climate here did not suit them. On the other hand, the *Lonchocarpus* certainly at home, having grown very rapidly with a branching habit, and it promises to be a very useful shade-tree at low elevations. Some of the shoots have grown 8 feet in nine months."

The Director of the Botanic Gardens and Forest Department, Straits Settlements, refers to the African coffee in his *Report for the year 1895*, as follows:—

"Among these [economic plants] is a small lot of the new coffee (*Coffea stenophylla*) a plant spoken very highly of. It is growing steadily and well, and at present does not appear to be affected at all by disease. Plants have been distributed to coffee planters in different parts of the Peninsula for experiment and observation."

TEA.

Natal tea in London.

We notice for the first time Messrs. Gow, Wilson and Staunton's Tea Circular of the 19th March a section devoted to Natal tea. Only one estate, however, is represented, the average price being but 6½d. for Pekoe and Broken Pekoe. Not a brilliant beginning, but we hear that several Ceylon merchants have spied out the land and are determined to push the industry all they know.

The duty on tea.

We have now arrived at the period of the year, says the *H. Colonial Mail*, when budget anticipations are the order of the day. Sanguine experts conjecture that the surplus

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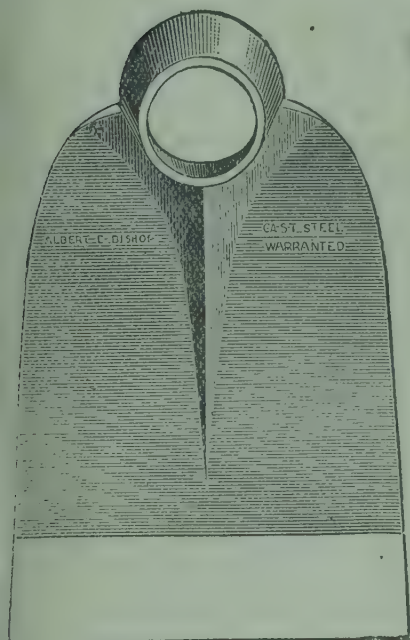
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Touching a shipment of Indigenous Tea seed, an experienced Indian Planter writes us from Madura District dating 24th June 1896: "Just received the Tea seed; it has arrived in perfect condition, notwithstanding unnecessary delay in transit, and does you credit. Please book me for five maunds as early next May as possible."

TELEGRAPH ADDRESS:

WILLIAM,
Via Colombo, Heneratgoda, Ceylon.

J. P. WILLIAM AND BROS.,
TROPICAL SEED MERCHANTS,
HENERATGODA, CEYLON.

will reach the highly satisfactory figure of two millions. If this calculation should prove to be accurate, those interested in the tea industry may fairly claim a remission of the impost which now presses so heavily on their produce. Tea yields a revenue of nearly four millions a year. It is generally looked upon as being one of the prime necessities of life. The bulk of the tea consumed is British product. As we have repeatedly pointed out, the duty is regarded by "the man in the street" as a tax on food, and nothing would be more popular at home than for the Ministry to take the line we have advocated of reducing or abolishing the impost. Anything that would benefit India at the present juncture, now that she is the victim of plague and famine and consequent depression in business, would be ungrudgingly allowed even by the many financial interests that always scramble for the crumbs which fall from the table of the Chancellor of the Exchequer in surplus years.

This is strongly supported by the *Grocer*.

Thus saith "P", a well-known planter of ability, *re* our notes in our last issue:—

It has become a fairly well-recognised fact that flavour is rather improved than deteriorated by manuring, and also that heavy pruning does not to affect the quality of crop must be accompanied by heavy manuring.

The majority of S. India planters who really prune heavily are careless regarding first pluckings, which must be watched most carefully to form the bush, and not to unduly exhaust the sap, which is of course in full flow.

The principle I have always followed is that deep pruning should be undertaken early in December, or late in April to avoid damage from hail. That the piece of tea so treated should be at once deep-hoed and afterwards trenched and prunings buried in with heaps of manure. If pruned in December and so treated, first flushes (not tipping) will be ready in June or July, and if carefully attended to, the yield will exceed that of previous years, viz., if the plot had given 250 lbs. previously in the season after treatment, it should give 300 lbs. or thereabouts, notwithstanding the loss of early flushes, and the ensuing season should give five maunds at least.

In conclusion, do not prune heavily unless you are prepared with large supply of manure, for though the cost is heavy, both quantity and quality will soon cover the expense.

P.

Prunings for caffeine.

It was stated in a late issue of our paper that 3d. per lb. for tea refuse, i.e., prunings of tea bushes, could never pay for packing and freight home and manufacture, &c. This was on the supposition that the full tea rates would be charged. Which is wrong. As it would not matter in the slightest degree how the tea intended for the manufacture of theine was either packed on the estate (baling would be all that could be required) or stowed away in the holds, expenses under both these heads would be enormously reduced. So that 3d. per lb. would probably result in an appreciable profit. Have any of our readers, by the way, the slightest conception of the yield that strippings from prunings could result in? No less than 600 lbs. made "tea" per acre. So that even if the profit per lb. were infinitesimal, the aggregate returns would be respectable enough. Were the trees liberally manured (not pruned), it should be possible to get as much as 2—3,000 lbs. of strippings for theine per acre. We doubt whether there would be any need at all for withering in such cases. A sort of magnified

coffee roaster would be enough to drive off what little moisture there was. A large ragi-hand-driven mill to crush the leaf into dust and a cheap press to jam the stuff into chests or bales would suffice.

Theine is most abundant in the young shoots, so that the second and succeeding strippings, say 4—5 in the year, should yield more satisfactory results in every way.

The Home Market.

There has been a further diminution in the quantity of Indian teas brought forward, says the *Produce Markets Review*, referring to the sales of the 26th March, but owing to the falling off caused by the sudden rise in values the bidding was inactive. Prices, generally, for the medium and lower grades, were less firm; many of the Calcutta-bought invoices were neglected, and a good portion withdrawn, although holders were willing to accept easier rates than those of last week. For better descriptions the market is steady, as their values have not been affected by the rise in the common sorts, although the demand has been adversely influenced by the speculative movement in the latter. As these teas are not likely to be in excessive supply, their values will no doubt be maintained, and probably later on higher rates will be established. The finest sorts, which are not largely offered, meet with a good inquiry at steady to firm prices, and as the imports are now drawing to a close, an advance on current rates is not unlikely. Latterly there have been complaints respecting the inefficient bulking and inspecting, and a considerable number of parcels have been thrown up in consequence; in fact, there have been several instances where teas have not been bulked either here or in India. It has been always understood that bulking should be thoroughly carried out where necessary, and the trade have relied on the merchants to see that this was fairly and efficiently done, so that the small public sale samples fairly represent the bulk. Formerly the word "bulked" was printed on the top of each invoice, but of late this has been very generally discontinued, and consequently buyers have no guarantee that the teas bid for in public sale have been bulked. To obviate this it will be necessary that the assurance as to bulking should be reinserted in the catalogues, as was formerly the case; otherwise the confidence hitherto placed in the sale samples will be shaken, and endless complications will arise. There has been little change in the position of Ceylon tea, the market remaining firm, with a slight improvement in the demand. Broken Pekoes continue to be offered much in excess of requirements, and the best value on the market now obtainable is in these kinds, but the finest grades are still scarce, and the late full prices have been well sustained. The inquiry for whole-leaf teas is still strong, and the late rise has been fully maintained, although the sales contained a larger proportion of the commonest grades. Supplies have again been on a moderate scale, as will also be the case next week, so that any alteration in prices in a downward direction is not likely at present.

THE TEA TRADE IN 1896.

WHAT Messrs. Geo. White and Co. have to say on the tea trade is always worth listening to, and their Annual

Report which we give below is no exception to the rule. The prospects are not exactly brilliant, but, granted the American and other markets are vigorously attacked, fairly encouraging. A very marked decline is observable in the retail prices, a large proportion going into consumption at 1s. to 1s. 4d. per lb., while 1s. 6d. and 1s. 8d. is considered a liberal figure for the better kinds. Over-sorting, to which we referred in our last issue, is touched upon: "As a rule sorting into too many grades is inadvisable. A Broken Pekoe of say 30 chests or more; a good Pekoe of 50 chests or over; a Pekoe Souchong of 70 chests or over, with a break of Broken Tea or Pekoe Fannings will be probably found to answer." Sift out all dust and pack by itself.

An important note is that given on the growing demand for "self" teas, *i.e.*, large breaks of one character. Small gardens might pass their coarser leaf through an equalizer and mix up all again as unassorted. This would reduce the number of samples to be tasted, and be a great convenience to small shippers by enabling them to send full-sized breaks, *i.e.*, a minimum of 20 chests of one kind. Broken Pekoes steadily decreasing in favour afford another ground for this style.

In the analysis of the District Teas, South India comes off very poorly, Travancore often lacking strength and the Nilgiris wanting in their traditional fine flavour.

We have omitted, for want of space, the elaborate statistical tables so liberally given in the report.

LONDON, 31, FENCHURCH STREET, E.C.,

22nd March, 1897.

As anticipated, supplies both from India and Ceylon have been much heavier than in the previous season. The Home Trade was however prepared for this, and assisted by an increasing export demand, succeeded in dealing with them, the more easily as shipments from China show a decrease of over 5 million lbs., while Java also has sent rather less.

India. Calcutta estimates of the crop published at intervals again varied considerably, ranging from 125½ million lbs. to 132¼ million lbs. for the United Kingdom, though even if the larger amount be reached it will not all come on to the London market, as probably 3 to 4 million lbs. will be transhipped "overside" to America, Canada, and elsewhere, besides what goes direct to other ports in Great Britain. Last year for instance, 121½ million lbs. were actually sent from Calcutta, whereas including shipments from South India, only 118½ millions were received into the London Bonded Warehouses.

Quality from all districts was as a rule ordinary, there being a lack of really fine, though Darjeelings and Docars were on the whole better than in 1895, while from Assam there were a few good invoices in July and August, after which they were disappointing in cup until the arrival of the Autumn Teas in December, when some very choice ones were received, and brought high rates. The finer grades being comparatively scarce, other descriptions were abundant, which led to a low range of price for fair Pekoes and useful Pekoe Souchongs. This depression, unsatisfactory at the time, has had a salutary effect on consumption at home, and also brought these Teas prominently to the notice of buyers abroad, so that deliveries for the last six months of 1896 were 62,420,000 lbs., against 59,382,000 lbs. in the same period of 1895.

From the 1st July, 1896, to the end of February last, the average for 890,000 packages sold on garden account, was 9½d. per lb., contrasted with 9d. per lb. for 800,000 packages in the corresponding portion of 1895-6, and 10½d. per lb. for 733,000 packages in 1894-5. It must be borne in mind, however, that although freights were mostly favourable, exchange was adverse during the principal portion of the season.

Ceylon.

Total shipments from this island during 1896 were 108,000,000 lbs., and in 1895 and 1894 they amounted to 98,000,000 lbs. and 84,500,000 lbs. respectively, while to Great Britain they rose to 93,936,000 lbs. *versus*

85,753,000 lbs. and 75,350,000 lbs. in the two previous calendar years. For the same twelve months the quantities sold in London were as under:—

1896,	1895,	1894,
1,049,000 packages;	950,000 packages;	876,000 packages;
(Average, 8½d. per lb.)	(Average, 8½d. per lb.)	(Average 8½d. per lb.)

showing a decline of ¾ths of a penny per lb. on the increased yield. Deliveries corresponded fairly well in the same time to the large weight to be dealt with, being 6¼ million lbs. over those of 1895, greater quantity taken for the continents of Europe and America rendering valuable assistance in disposing of the surplus.

In the period under review the weekly averages, which opened in January at 9d. per lb., did not fluctuate so much as in 1895, the highest recorded being 9½d. per lb. in November while the lowest was 7½d. in June, whereas in the year before they were 10½d. per lb. in January and 7½d. per lb. in June, rising again to 9½d. per lb. in December.

Generally speaking quality was of a useful description, but there was less choice flavoured, partly due no doubt to rather coarse plucking, and also to inclement weather at the time of manufacture.

Java. These Teas fully maintained their position particularly when they were the produce of plants raised from Assam or Ceylon seed, for which good rates were usually obtained. Owing to drought the outturn was considerably curtailed, and only 25,000 packages were offered at Public Auction from 1st July, 1896, to 28th ult., *versus* 37,000 packages for the same time in 1895-6.

The total amount exported from the United Kingdom during the past eight months, compared with the two previous years, is as follows:—

	India.	Ceylon.	Total British Grown.	China.	Java.
	lbs.	lbs.	lbs.	lbs.	lbs.
July 1, 1896 to end of Feb. 1897	3,952,000	6,131,000	10,083,000	13,954,000	605,000
" 1895 "	2,736,000	4,856,000	7,592,000	12,385,000	720,000
" 1894 "	2,391,000	3,443,000	5,834,000	14,220,000	538,000

and the distribution for three complete years, as taken from statistics furnished by the courtesy of H. M. Customs, was:—

		Continent of Europe.	United States.	Canada.	Other Countries.	Total.
		lbs.	lbs.	lbs.	lbs.	lbs.
India,	1896 ...	1,809,000	903,000	847,000	841,000	4,400,000
Ceylon	" ...	4,685,000	1,408,000	1,266,000	1,137,000	8,496,000
Java, &c.	" ...	767,000	88,000	31,000	172,000	1,058,000
China	" ...	11,089,000	1,979,000	1,918,000	4,341,000	19,327,000
Totals ...		18,350,000	4,378,000	4,062,000	6,491,000	33,281,000
India,	1895 ...	1,592,000	909,000	780,000	693,000	3,974,000
Ceylon	" ...	3,820,000	1,423,000	1,034,000	870,000	7,147,000
Java, &c.	" ...	658,000	111,000	61,000	163,000	993,000
China	" ...	9,751,000	1,075,000	2,206,000	5,407,000	18,439,000
Totals ...		15,821,000	3,518,000	4,081,000	7,133,000	30,553,000
India,	1894 ...	1,570,000	709,000	711,000	509,000	3,499,000
Ceylon	" ...	2,715,000	812,000	958,000	639,000	5,124,000
Java, &c.	" ...	704,000	152,000	37,000	195,000	1,088,000
China	" ...	12,711,000	1,558,000	3,160,000	4,539,000	21,968,000
Totals ...		17,700,000	3,231,000	4,866,000	5,882,000	31,679,000

In addition to the above it is computed that about 3¼ million of India and say, 1½ million lbs. of Ceylon (as against 2½ and nearly 1 million lbs. in the previous year) were delivered "overside" from the Port of London on arrival for immediate transshipment to other countries, and therefore were not taken account of in Imports to the United Kingdom.

The following figures will show the Exports from Calcutta to Colombo to other Ports than Great Britain, the latter market showing considerable development:—

	Australasia.	Asia.	America.	Continent of Europe.	Total.
	lbs.	lbs.	lbs.	lbs.	lbs.
Shipments from Calcutta ...	Season 1896-97—6,062,000	4,222,000	1,927,000	437,000	12,648,000
" " ...	1895-96—6,581,000	4,918,000	1,084,000	276,000	12,859,000
" " ...	1895-95—4,817,000	3,761,000	588,000	240,000	9,406,000

Shipments from	12 months	1896	1897	1898	1899	1900
Colombo.		11,807,000	1,388,000	719,000	618,000	14,532,000
"	"	1895—	9,390,000	1,187,000	394,000	890,000
"	"	1894—	7,477,300	1,053,000	216,000	345,000
"	"					9,191,000

The Board of Trade returns (which embrace statistics from all the Bonded Warehouses in the United Kingdom) for the past three calendar years were:—

	Home Consumption.	Export.	Total Deliveries	Bonded Stock, Dec. 31.
	lbs.	lbs.	lbs.	lbs.
1896 ...	227,786,000	33,281,000	261,067,000	106,345,000
1895 ...	221,800,000	30,553,000	252,353,000	101,336,030
1894 ...	214,341,000	31,879,000	246,020,000	99,503,000

From the above it will be seen that Home consumption showed a steady increase, also exports from here, particularly those of British growth as given on the previous page.

Allowing for expansion at a similar rate, our requirements during the twelve months may be set down at 270,000,000 lbs., of which—

India will probably send (including the Madras Presidency)	135,000,000
Ceylon " " "	100,000,000
Java " " "	5,000,000
Leaving China to supply, say	30,000,000
	270,000,000

Prospects.

With every indication of larger demand for British-grown Tea from nearly all quarters of the globe, and a gradual extension of the Home consumption, the outlook is fairly favourable, especially as the present scale of values is moderate for all descriptions, and judging from the estimates, supplies from India and Ceylon for the current year, although heavier, are not likely to prove excessive.

It will be interesting however to observe the results of the introduction of machinery and modern systems of manufacture in the produce of China, although it is not considered probable that the amount shipped from that country to Great Britain will be augmented thereby, at all events for some time to come.

The vital point to those interested in the Tea industries of India and Ceylon is the price which their productions will realize. The tendency is no doubt to a lower rather than a higher range. Writing on the 18th March, 1887, we said, "The public has been accustomed to cheap (*i.e.*, low-priced) Tea, and the 1s. 8d. and 2s. canister have been reduced to 1s. 4d. and 1s. 6d." Even allowing for 2d. per lb. reduction in the Duty since then from 6d. to 4d. per lb., there has been a further marked decline in the retail price, a large proportion going into consumption at from 1s. to 1s. 4d. per lb., while 1s. 6d. to 1s. 8d. per lb. is considered a liberal figure for the better kinds.

This tendency to a shrinkage in value, together with a possible higher rate of exchange, makes it more than ever a matter of necessity that the sale of British-grown Tea should continue to be pushed in countries other than Great Britain with all possible vigour. Considerable progress has undoubtedly been made as regards Russia and the Continent generally, as well as in Canada and the United States. To a great extent this result has been brought about by the good work done by both the India and Ceylon Tea Associations and those working in conjunction with them, but it is of paramount necessity that their efforts should be persisted in with even greater stress than heretofore.

Manufacture.

This important subject is evidently receiving more attention year by year, both in India and Ceylon as machinery improves, but there is still room for the application of science to some of the stages of withering, fermentation, and drying.

In 1881, with reference to this we wrote:—"There is little doubt that large quantities of leaf properly grown, and even properly withered, are spoilt annually for want of knowledge in the details of curing, which we believe is still in its infancy. The leaf after plucking has to pass through certain stages of fermentation and chemical action, which ought to be carried on with the utmost care and supervision,"—and, in 1885, we likewise suggested that a specialist should be appointed to experiment with a view to afford information to Garden Managers on these points.

The matter has also recently been commented upon in one of the leading trade journals, viz.:—*The Produce Markets Review*, which expressed the opinion that it would amply pay Planters to engage the best scientific assistance to study the chemical constituents of the leaf under different conditions of soil, weather, and blights, also of the various changes it undergoes in withering, drying, rolling, &c.

If such researches as these were successful, Teas of more uniform

quality might be sent throughout the season than is now often the case, and thus the wide fluctuations in value, occasionally as much as 6d. per lb., sometimes seen in invoices from the same Garden be avoided. Could this be accomplished, it would be of great benefit, as the want of the present day appears to be a regular supply, similar in appearance and cup, so that blends may be kept up to a fixed standard, while exporters would also welcome such a system which would enable them to match previous purchases without much difficulty.

As shown by experience, moderately fine plucking on the whole gives the best results, but managers will of course be guided by circumstances. For instance, in parts of Darjeeling, Assam and Ceylon where choice quality can be produced, a finer style may be adopted, whereas in low-lying districts where quantity pays best, the leaf would be allowed to become coarser.

Size of Breaks.

No alteration has been made since last year for India Teas, but the limits for large breaks of Ceylons have been raised, and they now stand as under, viz.:—

India—20 Chests, 30 Half-Chests, 50 Boxes. Ceylon—18 Chests, 24 Half-Chests, 40 Boxes.

Breaks of lesser size are sold separately at the close of the auctions.

Assortment.

In view of the increasing output already alluded to, any plan that will help to lower cost of production or facilitate the handling of his Teas after arrival on the market, will no doubt receive careful consideration from the Grower and those interested with him in the Industry. The whole crop from India has practically to be dealt with in about six months. During this busy period, when large quantities are also coming forward from Ceylon, buyers complain of the succession of small shipments which are often despatched at short intervals from the same estate, and this should, if possible, be obviated. As a rule sorting into too many grades is inadvisable. A Broken Pekoe of say 30 chests or more; a good Pekoe of 50 chests or over; a Pekoe Sou-chong of 70 chests or over, with a break of Broken Tea or Pekoe Fan-nings will probably be found to answer. Dusty parcels are not readily saleable and therefore this should be sifted out and packed by itself. The exception to the foregoing is when a tippy Broken Orange Pekoe or Orange Pekoe can be made, as these when really fine usually command high figures, whether from India or Ceylon.

There is, however, a growing want for "self" Tea among both the Home Trade and Exporters, and it is a question whether from gardens which are unable to send large breaks this could not be met in the shape of an "unassorted" Tea, not a coarse rough leaf, such as is perhaps generally understood by that name, but with an even appearance obtainable by the use of an "equaliser." When a certain "brand" became known, and buyers could count on regular supplies of the same mark, it would be a great benefit to them, by lessening the number of samples to be tasted here, and a saving of labour and time in sorting at the factory. An additional reason for adopting this style is the greater demand now-a-days for leaf kinds in contradistinction to Broken Pekoes, which are not used in such large proportions as formerly by the Home Trade, while shippers hardly ever take them.

ANALYSIS OF CROP.

Assam.

The crop has on the whole been good, particularly a few of the early arrivals, while towards the close of 1896 and commencement of 1897, some shipments came to hand possessing full autumn flavour, without the undesirable reddish appearance generally characteristic of the dry leaf of cold weather pluckings, which were much appreciated and sold well, thus favourably influencing the year's average of many gardens. During 1896 the yield was about 59½ million lbs. against 55½ and 53½ million lbs. in 1895 and 1894 respectively.

Cachar and Sylhet.

These districts sent fair ordinary Teas, being as a rule well made with useful infusions, and the result to date is rather better than that of the corresponding previous eight months. There was also an increase in the output, it being 45½ million lbs. compared with 39½ and 37½ million lbs. for 1895 and 1894.

Darjeeling and Terai.

Although the number of choice invoices was comparatively small, the out-turn on the whole was more desirable than that of the previous Season, and the average of the larger quantity was ½d. per lb. higher than in 1895-6. Yield for the three Seasons—11½, 10½, and 10 million lbs.

Dooars.

Quantity manufactured was again larger, which with more useful quality, gave a pecuniary result of ½ths of a penny per lb. higher than in the year before. Many of the Teas had full colour infusions, which commended them to the Trade, while

others, though not so thick in cup, were flavoury. Yield for the past three years, 22, 20, and 16½ million lbs.

Chittagong.

Shipments were of an ordinary type, and receipts heavier, being rather over 1,000,000 lbs. compared with 800,000 lbs. and 860,000 lbs. in 1895 and 1894.

Kangra, Dehra Doon and Kumaon.

Quality of these was again disappointing, there being a scarcity of really fine. The produce of the two latter districts is however principally sold locally. Yield has not varied much, being about 4½ million lbs. for the last three years.

Travancore and S. India.

Arrivals from the Madras Presidency have shown little or no change for better, probably owing to unfavourable weather. Travancore often wanting strength, while most of those from the Neilgherries lacked the fine flavour which renders them valuable. From Travancore a slightly increased amount was received, viz., 2¼ million lbs., against 2 and 1½ million lbs. in 1894 and 1893.

Ceylon.

Taken altogether the crop has been of a useful description, the proportion of rough leaf and poor liquoring kinds having been smaller, while evidences of improvement in style of manufacture have been apparent. From 1st July last 677,000 packages passed the hammer realising 8½d. per lb. against 627,000 packages in the corresponding period of 1895-6 which brought 8½d. per lb. Total Exports from Colombo for the past three years were 108,000,000, 98,000,000 and 85,000,000 lbs. respectively.

Java.

Quality has been fully maintained in the produce of this island, especially in Teas manufactured from plants raised from India or Ceylon seed. Severe drought curtailed the yield during a portion of the season, and shipments to this country were only 3½ million lbs. *versus* 4½ million lbs. in 1895.

ROUND THE BUNGALOW.

NOTES BY A PLANTER'S WIFE.

Getting up lace.

In Devonshire lace is wound firmly and evenly round a small white board covered with soft clean white calico stitched lightly over it.

The lace is wound from one end round and round, the top of one round overlapping the edge of the previous one; three or four layers can be put on, and the end or ends secured by stitching down. This is all covered again with a clean white wrapping not too thick, stitched firmly and evenly over it. Then the board is held upright in a basin full of hot suds and scoured vigorously with a scouring brush; it is then put into a pot on the fire and simmered a while in more suds. When taken out, the boards are all wrapped carefully in thick white towels and set aside to dry, a process which occupies several days. When quite dry, the covering is taken off and the lace unwound, and it then looks like new. No irons or stiffening are used. The most fragile and delicate lace may be washed in this way. Black lace which has got rusty may be restored by soaking in ammonia and water, or by washing in milk and water. It should never be rubbed.

Sponging out a headache.

In case of an ordinary nervous headache from which women suffer so much, says an authority, remove the dress waist, knot the hair high upon the head, out of the way, and while leaning over the basin, place a sponge soaked in hot water, as hot as can be borne, on the back of the neck. Repeat this many times, also applying the sponge behind the ears; and, if the assertion of the writer is not a mistaken one, in many cases the strained muscles and nerves that have caused so much misery will be felt to relax and soothe themselves out deliciously, and very frequently the pain promptly vanishes in consequence.

Keeping butter.

To preserve butter as long as possible in its fresh state, it should first be thoroughly washed so as to retain no milk, and then placed into a crock and pressed firmly into it in order to expel the air. Sufficient room should be left in the crock for a layer of fresh water to cover the butter, and so prevent its contact with the air. The water should be frequently renewed.

Another method is to wrap up the butter in a damp cloth of white linen, care being taken to keep the linen always damp. The object of this method being also to keep the butter from contact with the

air, it is advisable to use comparatively thick and coarse cloths, as they retain the moisture longer than finer ones, such as gauze, etc. The water makes the threads of the cloth swell and prevents the air from penetrating through; and as it evaporates, it also repels the air and tends to keep the butter at an equal temperature.

Housekeeping for bachelors.

So frequently have I been asked by bachelors what amount they should spend for housekeeping expenses, that I think a few lines on this subject may be useful as a guide to many of our young planting friends.

It would of course be quite impossible to give any hard and fast rule for expenditure under this heading, as tastes differ so much in many things, also what one man may think ample for living on, another may think a miserable pittance. However, as most assistants on an average I should think do not draw more than Rs. 100 a month. I will try and keep these remarks within their reach, and those drawing more pay can of course indulge in a more luxurious style of living if they please.

It is a rule among many young men to pay a certain amount of money into the butler's hand and let him do the whole of the catering in his own sweet way; this is, I think, a great mistake, as it makes one so much less independent, and in the hands of one's servant who thinks he can then buy and serve inferior articles of food for his master, and the surplus goes into his own pocket. Another grave mistake is paying one's butler too highly; neither is it fair to pay as much to a servant who has only one person to serve, as those who have families, and it makes it very hard to get a servant, at least a good one, when bachelors pay them in some cases as much as Rs. 17 a month. Then when it is a poor man who cannot pay so much as this, and says so, the servant in nine cases out of ten refuses to go to him, saying that such and such master paid him this amount and he will not think of taking less.

Surely it would be better if every young fellow in a neighbourhood were to make up their minds not to pay more than a certain amount to their servants and stick to it, it would then be fair all round. It is quite possible to get a good butler for Rs. 12 a month and with a good warm coat given him at Christmas, he will generally be satisfied. On most coffee estates there are certain allowances, such as kitchen coolie and tappal coolie, and where these are allowed, it is only necessary for a bachelor to pay two servants, i.e. butler and dhobie.

I will give as nearly as I can a list of things necessary every week with prices as in my district, and monthly as per Ootacamund prices, with an outline of using the same for one week, which will serve as a guide for other weeks also, with of course variation in the menu given.

Weekly Expenses.

	RS.	A.	P.
6 lbs. of Beef @ As. 2	...	...	0 12 0
1 Shin for Soup	...	...	0 2 0
½ lb. Suet	...	...	0 2 0
4 lbs. Mutton	...	...	1 0 0
½ Bot. Ghee	...	...	0 7 0
½ Maund Potatoes	...	...	0 8 0
Vegetables	...	...	0 4 0
Salt	...	...	0 2 0
Rice	...	...	0 4 0
Cocconuts	...	...	0 4 0
Onions	...	...	0 2 0
Spice, etc.	...	...	0 1 0
Eggs	...	...	0 8 0
½ lb. Butter	...	...	0 12 0
8 Loaves of Bread	...	...	1 0 0
Soap	...	...	0 1 0
			6 5 0

Monthly Payments.

Butler	...	...	...	12 0 0
Dhobie	...	...	...	3 0 0
				15 0 0
Chickens	...	...	...	1 0 0
1 lb. Vermicelli	...	...	...	0 10 0

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- Term Policies issued at moderate, non-participating Rates.
- The Medical Adviser sees applicants for Assurance at his residence, Pantheon Road, Egmore, on Wednesdays and Saturdays, between 11 and 12 noon.
- For Prospectuses, forms of proposals, &c., apply to

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	RS.	A.	P.
1 lb. Macaroni ...	0	10	0
1 Tin Cornflour ...	0	12	0
1 Bot. Salad Oil ...	0	10	0
1 Small Tin Mustard ...	0	5	0
5 lbs. Flour ...	0	8	0
1 Tin Knife Polish ...	0	6	0
1 Bot. Worcestershire Sauce ...	0	12	0
1 Bar Toilet Soap ...	0	8	0
1 lb. Tea ...	0	12	0
½ Maund Sugar ...	1	10	0
Matches ...	0	2	0
Blacking ...	0	8	0
Curry Powder ...	0	8	0
1 Bot. Capers ...	0	5	0
1 Tin Kerosine Oil ...	2	8	0
1 Tin Baking Powder ...	0	6	0
1 lb. Dried Apricots ...	0	8	3
1 lb. Dried Figs ...	0	8	0
1 lb. Raisins ...	0	6	0
1 lb. Currants ...	0	6	0
1 Tin Jam ...	0	8	0
1 Bot. Vinegar ...	0	7	0
1 Tin Chocolate and Milk ...	0	8	0
2 Tins Potted Meat ...	0	14	0
1 Tin Cods Roes ...	0	9	0
Jaggery ...	0	2	0
	17	6	0
4 Weekly Expenses @ Rs. 6-5-0 ...	25	4	0
Monthly Expenses ...	17	6	0
Servants ...	15	0	0
Total Rs. ...	57	10	0

In the monthly account you will notice there are some few items that will not be required every month, such as capers, vinegar, salad oil, vermicelli, macaroni, etc., and in the months these are not required other things may be substituted, keeping the account as even as possible every month.

In buying meat it will be best to buy it fresh twice a week,—beef one half of the week and mutton the other. We will suppose we get the beef, shin and suet on Wednesday and mutton on Saturday or Sunday. We will now see how we can manage on the things given in the above list. Beginning on Wednesday for breakfast. Menu for one week.

Wednesday, Breakfast.—Beefsteaks fried with onions and tomatoes, Mashed Potatoes, Bread, Curry and Rice. Dinner.—Clear Soup, Roast Beef, Potatoes and Peas, Stewed Figs.

Thursday, Breakfast.—Cold Beef and Salad, Dry Curry and Pepper Water, the remaining Stewed Figs. Dinner.—Julienne Soup, Bubble and Squeak, Chocolate Blanc Mange.

Friday, Breakfast.—Beef Cutlets with Mashed Turnips, Dry Curry. Dinner.—Carrot Soup, Stuffed Tomatoes, Beef à la mode, Rice Pudding.

Saturday, Breakfast.—Beef en Persillade, Vegetable Curry. Dinner.—Vegetable Soup, Cauliflower Omelette, Minced Beef on Toast, Roly Poly Treacle and Cocoanut Pudding.

Sunday, Breakfast.—Fried Eggs on Toast, Toad in the Hole, Chicken Curry. Dinner.—Pea Soup, Half Leg of Mutton stuffed and roasted, Stewed Apricots with Custard.

Monday, Breakfast.—Slices of the Cold Mutton fried and served with a border of Spinach, Chicken Curry hot. Dinner.—White Soup, Shank end of Leg of Mutton boiled and served covered with Caper Sauce, Jam Puffs.

Tuesday, Breakfast.—Eggs à la Bonne Femme, Irish Stew, Cabbage Curry. Dinner.—Mutton Soup, Vegetable Marrow stuffed, China Chilo, Cottage Pudding.

Herewith I give recipes for one or two of the dishes mentioned, which are perhaps not quite so well known as others.

Chocolate blanc mange. Take two large teaspoonfuls from a tin of chocolate and milk, pour over this a large breakfast cupful of boiling water, put this over the fire in a small saucepan, and when boiling thicken with a

tablespoonful of cornflour previously mixed with a small quantity of cold milk or water, boil for five minutes longer after putting in the cornflour; when sufficiently cooked pour into a small mould which must first be washed out with cold water, and the mixture poured in while the mould is still wet. When cold turn out and serve plain or with custard.

Fried eggs on toast. Allow one egg for each person, break very carefully and separate the yolk from the white, beat the white until it is like snow, put the white into the cup with the yolk (which must not be broken) and pour both into a small frying pan, in which there is a nice quantity of boiling fat or ghee, fry until the yolk of the egg is just beginning to set, dish up on a slice of fried or buttered toast and garnished with fried parsley.

Eggs a la bonne femme. As many eggs as required, two or three slices of beetroot, chicken or any other cold meat, and one or two lettuce. Boil the eggs for ten minutes, roll them to break their shells on the table, shell them, and cut them in halves, and just cut off the point of the white so that they may stand well. Take out the yolk and fill the white cup thus: two with beetroot (already boiled) cut into tiny dice; two with cold chicken or meat cut into dice; two with tiny dice of the yolks piled up in them. Cut up some coss lettuce very nicely, lay it on the dish, and place the eggs on it. I think most of the other dishes are well known, but if there are any which are not, I will be pleased to give the recipe. It will be noticed I have not put anything down for milk, as this is generally to be had for nothing from the estate cows. If, however, it has to be bought, one rupee a week should be allowed, getting seven or eight bottles for the rupee; half a bottle morning and evening is quite sufficient and allows plenty for puddings, sauces, etc. After all these items have been deducted from an income of Rs. 100, it leaves, roughly speaking, about Rs. 40 per month for personal expenses, household linen, papers, books and sundries. I would again, as in one of my former letters, impress upon one and all the importance of cleanliness, and of having every meal served in a clean and dainty manner. A small meal nicely served is far better than a loaded table, with dirty and stained table cloth, cloudy and greasy glasses, etc., and costs no more. You must make your servant understand that you always expect to have your table cloth clean and flowers on the table. If you are particular about this when you are alone, it matters not who may turn up to breakfast or any other meal, you will feel sure your table and the way in which the meal is served will be according to your wishes. I have said nothing about chota hazri and tea, as these can hardly be called meals, and there is generally a cutlet or two or some little odds and ends from other meals that come in handy, for chota with eggs, potted meat or jam is quite sufficient. Coffee is usually allowed free on coffee estates. I have, however, put down both tea and cocoa in my monthly list as one likes a change in these things. In most cases I would have any pudding or sweet that may be left over from dinner served after the curry at breakfast, and thus nothing is wasted.

Daisy, Australia. Thank you for the two recipes so kindly sent, which are printed below. I am always glad to receive recipes or articles from my correspondents.

Hop beer. For 6 gallons of water: ¼ lb. of hops, 2 oz. ginger, 3 lbs. of white sugar. Put the water on the fire; when it comes up to the boil, put in the ginger (which must first be bruised), sugar and hops in a thin muslin bag, in the water, and let it boil briskly for two hours. Take it off, and take out the bag; let stand 24 hours, skim, strain, and bottle, tying down the cork securely, or put in a barrel. It will not keep longer than one month.

Hare pudding. Cut your hare in small pieces, lay in a saucepan, a heaped breakfast cupful of green peas, one carrot sliced fine, one onion, cloves and cinnamon to flavour, pepper and salt to taste, one tablespoonful of butter, a cup and a half of water. Now make a paste with 1 lb. of flour, ½ lb. mutton suet finely shred, one teaspoonful of baking powder, sufficient milk to make a very stiff dough, put on top of meat, place saucepan on the fire, and cook for two hours, being careful it does not burn. Cold meat cooked in this way is also very good.

NOT EVEN IF IT COST TWENTY SHILLINGS.

A NOTABLE percentage—about one-third, I think—of the power of a steam engine is used up in overcoming the friction of its own parts. Hence inventors are constantly testing devices to reduce friction. Yet they can never overcome it; and the resistance created by it represents power (and hence expense also) absolutely lost.

Now the human body is a machine propelled by heat, exactly as an engine is; and anything that retards it may be considered as friction. Very good, then.

You have noticed great differences in your own vigour. Some days you work easily, and on others with difficulty. This is so whether you are chiefly a muscle-worker or a brain-worker; or a mixture of both—as most people are. Occasionally you are able to do more work in a day than at other times you can do in three. It is the odds between walking on smooth, hard level ground and dragging yourself uphill through wet clay. What wouldn't lawyers, authors, clergymen, and all other brain-workers give for something having the power to keep their minds clear and strong? Or body-workers for something that would prevent aching, weakness, and fatigue? Do I know what will do it? No, I don't. If I did, I could retail the secret for more money than is stowed away in the Bank of England. But I do know one thing, and will tell it you in a minute—for nothing.

First, however, we will talk of Mr. J. B. Goss and the friction he tried so long to overcome. Mr. Goss is a large farmer living at Stradsett, near Downham Market, Norfolk, and is well known in his district. When the farmers meet on market days, he often speaks of his experience and how he came out of it.

In order to cover it all, he has to go back fifteen years—to about 1878. At that time he began to feel the signs of some disease which he could neither account for nor understand. At first he merely realised that he was out of condition. His work became less and less a pleasure and more and more a task. From his business his thoughts turned upon himself, and no man can work well in that form. Then he and his victuals began to disagree, which is a state of things to make a man ask what can the reason be?

He had a well-provided table, of course; yet he often sat down to his meals and couldn't touch a morsel. Mr. Goss knew that this would never do. If a man expects to live, he *must* eat. There are no two ways about that. So he ate more or less—although not much without the stimulus of an appetite; he forced it down, as you may say. But this wouldn't do either. When the stomach goes on strike it can't be *whipped* into working before the question at issue is properly settled.

Thus it ended in his having great pain and tightness at his sides and chest. "I was constantly belching up a sour fluid," he says, "which ran out of my mouth like vinegar. I had a horrible sensation at the stomach for which I was not able to find any relief. For nights together I could get no sleep; and in this general condition I continued for five years, no medicine or medical treatment doing more than to abate some of the worst symptoms for the time being.

"In the early part of 1883 I heard of a medicine which was said to do good in cases like mine. Whether it would help me of course I had no idea. After so many things have failed, one naturally has no faith in a new one. Yet I got a supply and began with it. In a short time it was plain that I had come upon the real remedy at last. My food agreed with me, and soon all pain and distress gradually left me. Since then (now ten years ago) I have kept in the best of health. If I, or any of my family ail anything, a dose of Mother Seigel's Curative Syrup—the medicine that cured me—soon sets us right. We have no need of a doctor. (Signed J. B. Goss, March 24th, 1893.)"

Mr. Goss once said that if Seigel's Syrup cost 20s. a bottle, he would not be without it in his house. We can easily believe him. Considering what it did for him—and does for others—it would be cheap at any price. Yet, like plenty of things of the highest practical value, it costs but little. The reader can imagine under what difficulty and friction Mr. Goss must have done what work he did during those five years' suffering with indigestion and dyspepsia.

This then, we know: that life's friction and loss of power comes chiefly from that single disease, and that ease arises from the use of Mother Seigel's great discovery.

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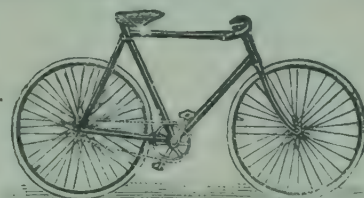
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MARKET SUPPLEMENT.

SATURDAY, APRIL 17, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (March 26, 1897) says:—A rather steadier tone has prevailed at Public Sale this week, but the market shows a further decline owing to the heavy supplies offered.

Over 2,700 bags East India were brought forward and all disposed of at a reduction of 1/- to 2/-, except fine Home Trade Marks which are fully maintained.

Costa Rica continues to form by far the greater part of the catalogues, and the demand being slow, values show a further fall of 2/- to 3/- except for the fine colory qualities which are unchanged.

Futures after some slight fluctuations close unchanged to 6d. dearer since last week.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending March 24th, 1897, says:—Bank rate 3%. Bombay Exchange closes at 1s 3 $\frac{3}{4}$ d. Brazil Exchange 8d. Rupee paper 3 $\frac{1}{2}$ % 63 $\frac{3}{8}$. Silver 28 $\frac{1}{2}$ d per oz.

The demand at auctions has been much quieter this week, consequently the large supplies catalogued sold very irregularly. Holders are anxious to realize, and in many cases have accepted considerable reductions, especially for the ordinary qualities, which shew a decline of fully 3s per cwt., whilst fine close about 1s lower. The moderate quantity of East India offered sold at about 1s to 2s decline.

Brazil markets are dull and lifeless.

Daily receipts have averaged 8,143 bags in Rio, and 10,143 bags in Santos.

Futures have been entirely under the influence of daily receipts in Brazil, which at the opening of the week were large, and caused a further decline; to-day, however, they shewed a decided falling off, the result being a corresponding advance in prices, and the market closes steady at a decline of 6d to 1s, viz.:—Good average Santos in Havre, March delivery closes at fcs. 55.00, in Hamburg pf. 45 $\frac{1}{4}$, and No. 7 low ordinary Rio in New York \$8.30.

To-day's London official quotations are:—

	March	May	Sept.	Dec.
Rio	42/3	42/6	42/9	43/-
SANTOS	43/9	44/-	45/3	45/9

We quote:—

Ceylon, mid. to good mid.	105/@117/	Costa Rica, mid. to fine...	85/ @110/
Do. small to low mid.	90/ „ 102/	Do. ord. to low mid. ...	72/ „ 84/
East India, mid. to good		Jamaica, good to fine ord.	60/ „ 72/
mid...	97/ „ 104/	Do. greenish to fine	
Do. small to low mid.	84/ „ 93/	colory...	82/ „ 120/
Guatemala, mid. to fine...	85/ „ 101/	African	38/ „ 41/
Do. good ord. to low		Columbian, ordinary	64/ „ 68/
mid...	74/ „ 84/	Do. good ord. to	
Salvador, good ord. foxy		low mid...	69/ „ 85/
greenish...	65/ „ 67/	Do. mid. to fine...	84/ „ 100/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
Rio	2,829,000	1,939,000	1,901,000
SANTOS	4,411,000	2,727,000	3,459,000
	7,240,000	4,666,000	5,360,000

Auctions:—

20 casks and tierces	22 barrels and bags	Plantation	
Ceylon			@ 98/6 @ 121
611 bags Mysore			84/ „ 108
1,412 bags Coorg			83/ „ 110
80 bags Neilgherry			87/ „ 102
57 bags Wynaad			90/ „ 103
3 tierces 239 barrels	40 bags Jamaica, part sold		55/ „ 91
13,701 bags Costa Rica, chiefly sold			66/ „ 108
728 bags Guatemala			61/6 „ 96
180 bags Salvador, part sold			90/ „ 92
135 bags Mexican			88/6 „ 97
823 bags Columbian, chiefly sold			67/6 „ 79
12 bags Venezuelan bought in.			
10 bags Peruvian bought in.			
77 bags Liberian Johore bought in.			
140 bags African bought in.			
181 half-bales Mocha bought in.			
16 half-bales Abyssinian withdrawn.			

On Quay Terms:—

1,000 bags Santos bought in.

Landed last week	751 tons.	Deliveries	2,344 tons.	Stock	23,965 tons
Do. last year	1,470 „	„	1,179 „	„	22,947 „

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of March 26th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1896-1897...	1,425,904 packages.	914,183 packages.	35,289 packages.
1895-1896...	1,345,064 „	812,140 „	46,778 „
29,652 pkgs. INDIAN	Total 49,023 packages were offered in public auction this week.		
17,599 „ CEYLON			
1,772 „ JAVA			

The figures below show that Home Consumption in the United Kingdom increased to a moderate extent during the last nine months while imports were much heavier. Consumption of China Tea has again fallen off.

Movements of Tea in United Kingdom from 1st June to end of Feb., as shown by Custom House Returns.

	IMPORTS.			HOME CONSUMPTION.			EXPORTS.		
	1896-97.	1895-96.	1894-95.	1896-97.	1895-96.	1894-95.	1896-97.	1895-96.	1894-95.
BRITISH E. INDIES	126,224,591	115,116,420	109,400,647	91,934,138	90,876,071	85,845,012	4,153,769	2,952,104	2,684,9
CEYLON	71,026,668	63,326,174	56,866,120	62,741,070	57,655,890	53,500,162	6,820,319	5,483,158	3,895,6
CHINA	31,619,741	37,248,322	44,874,828	14,900,639	17,111,290	18,339,397	15,335,133	13,899,929	15,874,1
OTHER COUNTRIES	4,436,751	7,302,452	5,479,584	3,423,459	3,200,545	2,843,753	684,764	801,396	610,6
TOTAL lbs.	233,307,751	222,993,368	216,621,179	172,999,306	168,843,796	160,528,324	26,993,985	23,136,587	23,065,3

Re-exports of Indian and Ceylon Tea are encouraging, but the increased quantity sent to Canada is partially due to the fear of an alteration in Tea duty in the dominion.

SUPPLEMENT TO PLANTING OPINION.

Analysis of Export of Tea from U. K. (not including transshipments).

			INDIAN.		CEYLON.		CHINA.		OTHER COUNTRIES.	
			1896-97.	1895-96.	1896-97.	1895-96.	1896-97.	1895-96.	1896-97.	1895-96.
COUNTRIES IN EUROPE	...	...	1,595,428	1,264,231	3,751,696	2,908,290	8,194,688	8,070,650	511,484	589,832
UNITED STATES	...	...	805,104	527,385	920,040	1,044,777	1,856,173	528,157	42,323	36,740
BRITISH N. AMERICA	...	...	1,160,889	654,439	1,374,648	882,053	2,284,108	1,622,103	29,883	48,354
OTHER COUNTRIES	...	...	592,348	506,049	773,935	648,038	3,000,164	3,679,019	101,074	126,470
TOTAL lbs. ...			4,153,769	2,952,104	6,820,319	5,483,158	15,335,133	13,899,929	684,764	801,396

Stock of all Tea in United Kingdom at end of Feb., 1897, lbs. 102,400,185 ; 1896, lbs. 100,589,193 ; 1185, lbs. 99,511,265.

Indian. Auctions comprised 29,652 packages, against 26,291 last week; the market was rather easier, common whole leaf Teas not being quite so keenly bid for. Teas now arriving are very red and too light in cup, the useful quality previously noticed not being maintained.

Week's av. Tea sold on Garden Account, 1897, 22,089 pks., av. 8d.

1896, 13,837 pks., av. 8d. 1895, 15,957 pks., av. 9d.

				1897.		1896.	
				Pkgs.	Price.	Pkgs.	Price.
Assam	...	...	...	9,221	p 9½	5,353	p 9½
Cachar and Sylhet	...	...	...	10,402	p 7	5,099	p 7
Chota Nagpore	...	...	...	—	—	60	5½
Darjeeling	...	...	...	—	—	139	6¾
Dooars	...	...	...	2,077	p 7¾	2,295	p 6¾
Kangra Valley, &c.	...	...	...	—	—	56	p 9½
Neilgherry	...	...	...	136	p 7	180	p 7
Terai	...	...	...	85	8	—	—
Travancore	...	...	...	168	p 7½	655	p 6¾

Comparative prices of Indian Tea in London:—

		1897.	1896.	1895.	1894.
DUST.	(Fair ordinary, dark liquor) ...	4 $\frac{1}{2}$ d	4 $\frac{3}{4}$ d	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d
FANNINGS.	(Red to brown, strong rough liquor) ...	4 $\frac{3}{4}$ d	4d	5 $\frac{1}{4}$ d	4 $\frac{1}{2}$ d

BROKEN TEA. (Brownish to blackish, strong liquor)	1897. 7d	1896. 6d	1895. 7½d	1894. 6d
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PEK. SOUG	(Blackish greyish, useful liquor).	7½d	6½d	8d	7d
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PEKOE.	(Greyish to blackish, some tip, useful liquor)	... 8½d	7¾d	8½d	9d
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PEK. SOUG.	(Blackish greyish, inferior liquor).	5¼d	5¼d	6½d	5½d
PEKOE.	(Blackish greyish, some tip, in-				

FERRO.	(Blackish greyish, some sup, inferior liquor)	...	6d	5½d	7d	6½d
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Ceylon. About the same quantity was brought forward as last week. The market showed a tendency to weakness, Broken Pekoe kinds being still difficult of sale, while the lower grades of whole leaf were not in quite such strong demand.

Average for week 8½d. against 7½d. for same period last year.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor) ...	6½d	6d	7¼d	6¾d
PEKOE (Ordinary leaf, little twist; fair liquor) ...	7½d	7¼d	8¼d	8½d
PEKOE SOUG. (Rather bold leaf; indifferent liquor) ...	5d	5d	6½d	5½d
PEKOE (Somewhat bold leaf; indifferent liquor) ...	5¾d	5½d	7d	6¼d

Java. Competition was fair, without much alteration in the market. Eleven gardens were represented, all the Teas being sold. 108 packages from "Perbawatee" averaged 10d.

Bank rate 3 per cent. Exchange on London three months sight.—
Calcutta $1\frac{3}{4}$, Colombo $1\frac{3}{4}$.

PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8d.) March 26, 1897.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry ...	136 p	7												
Curzon ...	115 p	7½					28½c	8½	30½c	7	43 p	6¼7½	14½c	6½
Hocorra ...	21	6¼	8	7	6	6¼	...	...	7	5½	...	...	...	...
Travancore ...	168 p	7½												
Glenmore ...	85½c	6½			48½c	6¼	37½c	7¼	...	...	...	...	...	...
Isfield T Co Isfield...	83	7¾			26	8¼	30	8½	23	7¼	...	...	4	4

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PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, MAY 1, 1897.

[No. 9.]

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 14th May 1897.

Central Travancore.

prospect of continuing.

PEERMAAD, 27th April.—Weather.—Rainfall to date for month 4.21, for year 9.63. *Crops.*—Tea flushing well and every *General Health.*—Good.

N. Mysore.

YEDAHALLI, 29th April.—Good showers of rain fell on 17th, 18th and 20th. Over two inches were gauged at taluq kutcherry. I hear the blossom showers on the neighbouring estates have failed. The bridge-work at Thadasa continues to make rapid progress, and was inspected on the 27th by the Inspecting Engineer. Days extremely hot, and more rain wanted to admit of ploughing operations being begun.

North Wynaad.

MANANTODDY, 26th April.—Weather.—11th to 14th heavy dews at night, misty mornings and sea-breezes, more or less strong, P.M. 15th thunderstorms commenced and continued daily thereafter till 22nd. Heaviest fall was 95 cents on 16th, which was the means of bringing out the second coffee blossom of the season on 24th. Total

rainfall from 15th to 22nd 1.70. Prospects for next coffee crop are not very bright. *Plant diseases.*—None. The orange-coloured enemy's last virulent attack has left its mark in the shape of much undeveloped and abortive spike. *General Health.*—Less feverish since showers have fallen. *Labour.*—Lots. *Grain.*—Much paddy being carted away to Coast.

S. E. Wynaad.

PUNDALUR, 28th April.—Weather.—From the 15th to 22nd April every evening from 3 P.M. to 7 or 8 P.M. we have had good showers and since during the day very hot and cool at nights. *Crops.*—Blossom setting but it can hardly be estimated. *Interesting Items.*—Ever since the gold mining companies left Wynaad, the Kurumbers and Punniers have worked the crushings privately. An arrack vendor at Pundalur went to the Nellyalom palace and got a license for a fortnight to try for gold on Phoenix Mill house; he got 24 tolas of solid gold, besides some quicksilver from the crushings; this news got around and the Nellyalom Ranees washed and got 71 tolas of gold. Now Yencatasawmy and M. Nuthar Saib are paying heavy rent and are washing. The reports written by Mr. Brough Smythe before the advent of the gold mining companies were true. The companies brought money from England and took it back by paying very highly for managers, miners, machinery, travelling and shipping charges, etc.; when the money was exhausted they had not sufficient to work the mines properly and thereby closed all the mines. Messrs. Punnett and Mitchell also took gold out on Richmond from the crushings; I do not know how many tolas; this shows that there is gold in Wynaad but requires good working. The companies at Kolar have learnt good lessons in Wynaad and did not spend money headlong at the beginning, and as they are progressing they are increasing labour machinery and buildings, etc.; this is what is keeping them up.

Nilgiris.

SHOLUR, 24th April.—Rainfall to date from 1st January 4.75. Temperature between 6 A.M. and 6 P.M., 59° and 81°, respectively. Tea flushing very freely, and heavily pruned coming on exceptionally well. Labour for the time of year very plentiful. Health fairly good, except a few cases of fever and slight dysentery amongst children. 26th April.—High dry winds have checked flush a bit, but the previous favourable weather had made bushes run away.

This is not altogether to be regretted, so early in the season, as it allows the trees to make wood and "form."

COONOR, 29th April.—On the day following my last report we had a very heavy thunderstorm, followed up by another on the 22nd, besides a few casual showers in the interval. Total for fortnight 3.21 inches, or 3.34 for month up to date. High elevation estates blossoming at intervals; taken all round there are strong hopes of an average year at least. Tea going strong and flavour improving. Labour sufficient. Health fair.

GENERAL NOTES AND ARTICLES.

We understand that the Baron von Rosenberg, of the Kanan Devans, has devoted not a little time and trouble to drawing up a practical scheme for the working of planting banks. The result of his investigations would be well worth publication.

An investment.

Men on the look out for a good investment for their capital might do worse than attend the auction sale of Pandilands estate, advertised elsewhere by Messrs. Oakes & Co., Ltd., to take place on 29th instant at Ootacamund. The land is virgin forest.

Kodaikanal.

A Ceylon resident, now in Kodaikanal, writes to a Ceylon paper:—
"The air here is dry, a great contrast to the damp of Ceylon. The scenery is grand, as this place is situated over 7,000 ft. above the sea, and rises from the plains in about 15 miles. Living is cheap in consequence—a great contrast to the high prices all over the upcountry of Ceylon. Supplies have only to be carried a short distance, and everything is done on a system, so that you pay only the amount of cooly-hire in excess of the prices ruling in the plains below. Now that such an excellent steamer and railway service has been established to South India from Ceylon, it is a wonder that so few Ceylon residents avail themselves of the opportunity of coming to this place, which is pronounced by some competent authorities the best sanitarium in South India.

"At present Colonel Tidy and family are the only Ceylon visitors here, besides Missionaries. It is a great place of resort for the latter, especially those from Jaffna."

Market Funds.

Touching on the matter of a special fund for pushing the market for coffee, our contemporary the *Madras Mail* recently had a sensible article on the subject. The writer points out very truly that, as the U. P. A. is in fact truly representative of the whole planting industry of South India, the formation of special funds to push any separate branches of the industry, e.g., coffee, tea, &c., should be undertaken under its ægis. At present the funds contributed by South Indian tea-planters go direct to the Indian Tea Association. It were advisable that in future the contributions should pass through a special Tea Committee of the U. P. A., and thence remitted to the Calcutta body. For the purposes of pushing our coffee markets, a similar coffee committee could be formed, the funds for its disposal being raised quite outside the general U. P. A. income. In this manner there could not be the slightest fear of the rival claims of our two great staples clashing.

Selection of seed.

In England wheats are bred, in America maize and corn, and out here coffee and tea may be in the same way improved immensely by a proper selection of seed as we have very many times pointed out. In the Straits Liberian seed of the 4th or 5th generation of selected stock fruits earlier, and has a distinctly

larger fruit than the ordinary run of the coffee and the crops are heavier. Out of any given number of coffee trees some always crop earlier and heavier than others. Some have a large bran, some a small. Some are liable to any sickness that is in the air and some are very hardy. Now take the hardiest, heaviest bearing of the early croppers and plant the seed and from them select on the same principle the best trees; from which take the seed again at the end of 4 or 5 generations. You will find a distinct variety which should not only crop earlier and heavier but have a larger bean and be more hardy. Of course if you can conduct your experiment away from the other coffee with only tea, cinchona or jungle round the experimental field, success will be more assured. The Liberian seed from Wellington estate in the Straits has been thus selected and gives the best Liberian coffee I have ever seen.

Planting Banks.

A good deal has been said of the advisability of starting Agricultural Banks for Indian ryots. Many of the objections urged against their introduction do not lie against a similar scheme for planters. And yet there can be no doubt that, as a rule, Planting Banks would do as much for the planting community generally as the Agricultural Banks for the ryot. There are many tried men, young and old, who would eagerly "start on their own account," and open out for themselves, could they only obtain the necessary capital at an easy rate of interest. For a planter without capital must drudge along as Superintendent or Manager to the end of his planting days, happy if he dies in harness. The necessity for such an institution is too patent to need further remark. It is a very different thing when we have to consider how such an institution may be started. From first to last it must be a mutual undertaking, supported and managed entirely by planters. There are no hopes of starting with any large capital. Yet if a beginning is made, by wealthy proprietors contributing a few thousand rupees each, in a short time the fund will mount up very quickly. Naturally the loans at first advanced would have to be very small, but with the increase of capital, the help afforded would grow in proportion. The ruling idea in such an undertaking would be to lend the money at the lowest possible rates of interest, and in return to obtain the best security available. In Italy, where the system of Agricultural Banks has developed enormously, it has been found to be a perfect success. The loss by bad debts is practically nil; this factor is a very important one to bear in mind in this connection. Anyone attempting to defraud the Bank would be in the position of attempting to cheat his friends and neighbours. The certainty of the treatment meted out in such cases practically enforces the most rigid honesty. In the case of planting banks, practically every planter would be, to a greater or less extent, shareholder. And a very sharp eye indeed would be kept on the transactions of the borrower by his much interested neighbours.

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TERMS MODERATE.

THE MYSORE BOTANICAL GARDENS.

THE annual report of these gardens for the year 1895-96 has just reached us. There is a great deal of interesting information therein as usual, and we heartily congratulate Mr. Cameron, the able Curator, on the successful way he is managing the gardens under his care.

In publishing the following extracts, we may remark that the services of trained and skilled native gardeners can be obtained by application to the Curator :—

Viticulture.—The experiments under this heading are conducted on a limited scale at Seringapatam and Bangalore.

The vineyard in the Daria Dowlat Bagh, at the former place, is the property of Government and consists of 30 vines planted over an area of 1,584 square yards. The first planting was done in October 1894, when six healthy canes of the following hot-house grapes were put down :—

- | | |
|-----------------------|--------------------------|
| 1. Foster's Seedling. | 4. Gros Coleman. |
| 2. Black Alicante. | 5. Muscat of Alexandria. |
| 3. Lady Downes. | 6. Gros Maroc. |

These have grown satisfactorily and produced their maiden crop of fruit last June. In July 1895 the Kashmir vines were planted, 24 in number. These consist exclusively of the wine-producing varieties named in my annual report of 1894-95. The growth in this case is also fairly satisfactory.

At first, there was difficulty about irrigation, as the channel water is often cut off just at the time when it is most needed for the vines. But now that a small well has been provided, the difficulty is perhaps overcome. It is only during the forcing period—from end of March until the beginning of June—that irrigation is required.

A second crop is taken by some growers in the cold season, but unless the first crop has failed, it is wiser to be satisfied with one and let the vines have a good rest.

The other vineyard, which contains 53 vines planted over an area of 2,617 square yards, is the property of Her Highness the Maharani-Regent, and is included in the Palace Gardens at Bangalore. Table grapes of excellent quality, such as the Black Hambro', White Frontignac, and Aurungabad, have been grown in this garden for many years, and it is partly due to this fact that Government wished to extend the operations of grape-culture generally. The Dewan, Sir K. Sheshadri Iyer, K.C.S.I., has himself taken the lead by planting a vineyard of perhaps greater extent than either of the foregoing in his private garden at Bangalore. A few of the local raiyats have also planted, and should others wish to do so, every facility will be offered in the matter of supplying cuttings from good stock. Only one or two of the wine-producing varieties are included in the Palace vineyard. In addition to three unnamed kinds, the following are doing well :—

- | | |
|--------------------------------|-------------------------|
| 1. Black Hambro'. | 5. Gros Coleman. |
| 2. Aurungabad, purple-fruited. | 6. Buckland Sweetwater. |
| 3. Do. white-fruited. | 7. Foster's Seedling. |
| 4. White Frontignac. | |

Sisal hemp—*Agave rigida sisalana*.—The work of the Gardens has been to propagate rather than to cultivate this useful plant. Without the approved means of extracting the fibre quickly, at the proper stage of growth, cultivation means waste, as under favourable conditions of growth, the plant would soon run to seed and become useless for commercial purposes.

In 1894, the nursery contained 3,000 to 4,000 plants: in 1895, one thousand plants were handed over to Mr. Geo. Ricketts, of the Forest Department, for actual cultivation, and at the present time the Lal-Bagh nursery contains about 6,000 plants. We have therefore sufficient stock to commence operations in a small field of suitable land. The Sisal hemp plant is easily propagated and perfectly hardy, as, indeed, all the fibrous aloes seem to be in the Mysore climate. There need be no hesitation to cultivate, although the introduction of suitable machinery to extract the fibre is a *sine qua non*, if cultivation is to become an industry. In this connection also might be tried the Mauritius hemp plant, *Furcraea gigantea*, and the Mexican aloes, *Furcraea longæva* and *F. Beddinghausii*, of which the Gardens possess thousands of young plants. We have also an etiolated form of the Mauritius hemp plant, *Furcraea gigantea*, which promises to yield a very delicate fibre.

With regard to machinery for extracting the above fibres, Article

CXLIV. of the Kew Bulletin for 1890 furnishes detailed information which would enable an engineer to construct a machine of the approved pattern. But there may be subsequent inventions of which information could be obtained from Florida, where the fibre industry has attained great results.

Rhea fibre—*Boehmeria nivea*.—With the advent of new inventions for the cheap extraction of this valuable fibre, there has been a brisk demand for plants to cultivate. But for many years there was no demand, and now that a reaction has set in we are not so well prepared for it. The stock of plants in the Gardens—originally a large one—had dwindled down to a limited quantity. But active propagation has been resumed and numerous plants will soon be provided by the division of tubers and insertion of cuttings. Being a monœcious plant, it is strange that local specimens have never seeded. *Boehmeria nivea* is indigenous to the Malay Islands, China and Japan. It is cultivated in India at various centres, but mostly in Assam and Bengal, where it appears to be domesticated to some extent. The Burmese and Indian species of *Boehmeria*—of which there are 10—may, in some cases, be mistaken for the true Rhea plant. The latter has been cultivated in the Lal-Bagh for upwards of 20 years and is perfectly hardy. Our long, dry season does not kill the plant, although during that period it hibernates to a great extent and is unproductive of cane. With sufficient irrigation, it grows all the year round and would give at least three cuttings of cane.

The most profitable course would be to select suitable sites for extensive natural growth in the Malnad districts of Hassan, Kadur and Shimoga, as a hardy plant possessing such valuable fibre cannot fail to bring revenue to the State at some period or another.

Forage plants.—The want of a hardy perennial to supply green forage during the rainless months of the year is much felt by the raiyats in most parts of India, and although many grasses and other plants of this class have been recommended for the purpose, from time to time, none have exactly fulfilled the requirements of the case. Among perennial plants already tried and mostly found unsuited are, *Symphytum asperum*, Prickly Comfrey. *Guazuma tomentosa*, Bastard Cedar. *Panicum sarmentosum*, Mauritius grass. *Atriplex nummularia*, and other species of the salt bush. *Panicum dumetorum*, Guinea Grass. *Lathyrus sylvestris*, Wood vetch. *Medicago sativa*, Lucerne. *Polygonum sachalinense*, Sachalin. *Cytisus proliferus*, Tagasaste.

Of the abovenamed, the Mauritius and Guinea grasses have proved useful, but they are somehow unpopular with the raiyats. Lucerne is extensively grown as a dietary corrective for horses. The ornamental grass referred to in last year's report, and now identified as *Thysanolaena Agrostis*, Nees, deserves a place among forage plants. It is indigenous to the subtropical Himalaya, where it attains to a varying height of 4—12 feet. Cattle are very fond of the whole herbage, and the culms remain green throughout the year.

A perennial grass of this sort, grown in the moist districts of the Malnad, would afford a large outturn of forage, and having a railway skirting the hills in some parts, it would be easy to distribute green food along the railway line.

Fruit trees at Nundydroog.—Varieties of the peach, imported from England, are doing very badly, while, strange to say, the Indore peach has grown splendidly. English apples and pears have not done well, although there are now signs of better growth in the former. A few varieties of the dessert pears have been grafted on to the Nilgiri cooking pear which succeeds well on the hill. By this means it is hoped to establish the better kinds that do so badly on their own roots. Propagation being the principal object of this garden, it is fortunate that the Nilgiri pear is so well established. The tree tomato, *Cyphomandra betacea*, succeeds well, the elevation being about 4,700 feet where the garden is situated. The trees reported to have made good growth last year are still progressing. But as they begin to bear fruit it is feared that the monkeys, which are again numerous, will do much damage. The orange, lime, citron, and other Aurantiaceous species planted on the top of the hill have much to contend with.

No sooner does a young leaf appear than it is attacked by voracious insects, of which a species of grasshopper and one of a caterpillar are the most destructive. Then constant exposure to wind and weather at an elevation of 4,850, with long periods of drought and an occasional fire, are equally injurious conditions. But a number of trees have attained some growth in spite of all these retarding forces and may eventually bear fruit.

New trees under trial.—The most interesting of these are—

(a) *Zizyphus jujuba*, a new variety of the Bhere or jujub plum from Mauritius, where it is called the "Masson variety." A few healthy seedlings have been planted out experimentally.

(b) *Erythrina umbrosa*, "Mother of cocoa." In tropical America this tree is greatly prized as a nurse and shade to cocoa plantations.

(c) *Erythrina lithosperma*.—Similar properties are now claimed for this tree in the eastern cultivation of coffee. A number of thornless seedlings have been raised from seed supplied by Mr. B. Nelson of Arienkow, Shencottah. Being furnished with numerous tubercles on the roots, the species is said to assimilate nitrogen largely, as in the case of clover or field beans. It is also said to be an evergreen tree, which is exceptional in the Indian *Erythrineæ*. A tree combining these useful qualities would be of great importance to the coffee planter.

(d) *Albizia moluccana*, another shade tree of the *Leguminosæ*. A number of seedlings are now available for distribution. There are some fine trees at Rochdale Park, where, it is said, the growth exceeded an inch daily during the monsoon.

The two species of mahogany, *Swietenia mahogani* and *S. macrophylla*, are now well established at Bangalore. The introduction of these useful trees is due to Dr. Geo. King, Superintendent of the Royal Botanical Gardens, Calcutta, who has made the Lal-Bagh presents of seeds for many years. The fine avenue tree, *Sterculia alata*, has been extensively propagated from seed supplied by the same benefactor.

Indigofera anil.—Seeds of this shrub, which is the indigo of tropical America and the West Indies, have been procured for local trial. Persons who are interested in this cultivation, in Mysore, should apply for seed and information.

Seed from grafted coffee.—Mr. F. G. Parsons, of Coorg, kindly presented a few coffee berries taken from the grafts supplied to him in 1892. The donor was of opinion, and so is the writer of this, that the beans were larger and heavier than is usually found in the ordinary *C. arabica*. The seed germinated, but was subsequently lost through an oversight in watering. But the seedlings raised by Mr. Parsons himself will, no doubt, be watched with interest. A few grafts now growing in the Palace Gardens are shortly expected to fruit.

Nepal pepper.—A small bagful of this superior chilli was presented by Colonel H. Wylie, C.S.I., the British Resident at Nepal. Steps are being taken to secure local cultivation on some scale. This variety affords the finest of all chilli-powders.

Achras sapota.—The sapodilla plum fruited in quantity at the close of the hot season. But the fruit is not very popular.

A NEW METHOD OF TREE PLANTING.

THE following very interesting description of what may be termed "Care Stump" planting forms No. 5 of the N. W. Provinces Agricultural Series. It is possible that planters, in dealing with two-year old "stumps," may find the new method of great service.

PREFACE.

The following article from the "Meldura Cultivator" regarding a new system of tree planting initiated by Mr. H. M. Stringfellow, of the United States Department of Agriculture, is published as a Departmental Bulletin for the information of fruit-growers in these provinces.

The writer strongly urges that when one to two-year old trees are planted, the roots be cut back to stubs about an inch long and the trunk pruned to a branchless whip from 1 to 3 feet high. It is maintained that by this means new roots grow strong and deep, almost directly downward, thus avoiding the drought that often affects the surface roots of young trees planted in the ordinary method. Successful experiments are cited in support of this method, and especially a peach orchard of 100,000 trees planted in Georgia in this way.

It is directed that the roots be cut cleanly in a horizontal plane, a hole 2 inches in diameter dibbled in well-worked soil, the tree inserted, and the earth tramped close around it. The system has been proved by Mr. W. Gollan, Superintendent, Botanical Gardens, Sahāranpur, to answer admirably in India in the case of apples, vines, peaches and plums, provided that they are operated on when dormant, or in these provinces from the 20th December to 20th January. It is not advocated for mangoes, leechies, oranges, loquats or other ever-green fruit trees, and can only be successfully followed between the dates named.

D. C. BAILLIE,

Director, Land Records and Agriculture,
N.-W. Provinces and Oudh

THE REVOLUTION IN TREE PLANTING.

About eight years ago it was announced by Mr. H. M. Stringfellow, a Texas orchardist of large experience, that the theory and practice of tree planting, as handed down from time immemorial, were wrong, and that instead of a tree being the better for having numerous roots when reset, the very opposite was true. Mr. Stringfellow then gave a full history of how he happened to hit upon this truth as well as a detailed account of various experiments upon a great many kinds of fruit and shade trees that seemed to demonstrate the truth of his statement.

The statement did not at that time meet with much support, so absurd did the idea of cutting off all the roots of a tree seem to even the most prominent horticulturists. Mr. Stringfellow, however, "stuck to his guns," and in a recent issue of the *Texas Farm and Ranch* he again dealt with the subject, and at the same time he gave the experience of other horticulturists in support of his contention. The article is reproduced below for the consideration of our readers:—

"Though I have written to quite a number all over the country the invariable answer has been, 'while such treatment may succeed with you, it would be out of the question here.' The fact is we inherit our opinions and ideas, just as well as the peculiarities of our bodies, and so true is this that the contrary of their beliefs is positively unthinkable to many men. An instance of this came to me in a letter from one of our most progressive nurserymen. He writes: 'I have been practicing close root-pruning with perfect success for some years, and yet my father, who is seventy years' old, and sees the good results every year, won't admit them, but persists in saying that 'if the roots were not necessary they wouldn't be put there.' So firmly, indeed, has this long root fallacy become embedded in the human mind by ages of practice, that even a man of Charles Downing's eminence in horticulture declares in his great work that the 'ideal transplanting' would be to take up a tree with its roots entire.

"That this would be absolutely the very worst form, anyone could easily demonstrate for himself. Let him take, for instance, a peach or other tree seeds, and plant a few inches apart in, say, a two inch pot of good rich soil. At the end of next year let him take them out and carefully shake off all the soil from their roots and plant side by side in the open ground. Let him spread out in a large hole all the roots of one tree according to the inherited regulation method, and cut back all roots on the other to about one inch, at the top to one foot—just enough to allow of its being stuck down about six inches, like a cutting. Treat alike, and in two years the root-pruned tree will be many times larger than the other.

"And here I wish to say, very particularly, that the great superiority of close root pruning is not always so apparent the first year the tree giving more attention to striking deep roots than to making top. Even for several years, we all know, trees as ordinarily do well, but this is due to the fact that a large amount of roots removed even then.

"But a comparison with these will prove that when the strain

it bearing comes, the close pruned tree—with its roots deep and long, out of reach of the plough, winter's cold and summer's heat and drought—will stand up for many years, giving good crops longer than the other, with its lateral and surface system, has broken down and died.

"How else are we to account for the early decadence of our latter-day orchards? The planter in his haste for fruit demands big trees with plenty of roots and top, to support which, and to make them live, the nurseryman often transplants several times. This gives a mass of fibrous roots, which will undoubtedly—if the season is good—make the trees live, but practically dwarfs them and destroys their future usefulness. While Samson lost his strength through having his hair cut off, a tree is for ever weakened by leaving its 'hair' roots on when set, for it seems then compelled to re-establish itself by emitting new fibrous roots entirely from these. This results in a permanent lateral and surface system. Sink a spade round such a tree a year—or even two—after planting, and a slight pull will lift it from the ground; a short root-pruned tree will resist any effort.

"The whole theory of the latter method is simply copying Nature. She starts her tree from seed, with neither tops nor roots, and universal experience has shown that these and trees grown from cuttings (which are practically seed) if never moved are the strongest, healthiest, longest lived and most productive.

"The advantages I claim for this method—over the all-important one of giving better trees—are: First,

"AN ENORMOUS SAVING

to the nurseryman in digging his stock, which now must be taken up with roots a foot or more long. Second, an equally great saving in packing. Instead of great bales of tops, roots, moss, bagging and rope, and labour of putting up the same, or large boxes containing thousands of pounds of the same useless dead weight, a thousand root and top pruned trees could be packed in a medium-sized, tight box, with a layer of wet moss in the bottom to maintain a moist atmosphere, and shipped with perfect safety around the world.

"THE SAVING TO THE BUYER

will be even greater. As an instance, several years ago I ordered 1,000 grape vines from California, and wrote specific directions for root and top pruning as well as packing, and offered to pay for the extra pruning, the box to be sent by express. The nurseryman letting me down for a crank or fool, packed the vines—top, roots and all—in three immense bales weighing 1,300 lbs., for which he got a special rate, and yet they cost me £14 charges. I pruned and packed them in a single bale weighing 127lbs., and shipped them 50 miles, after which they were set by being simply stuck down into well pulverised ground and tramped, the whole operation taking out two days. Every vine grew, and next summer—the third year—I expect to ship grapes by the car load. It would be hard to estimate how many thousands of pounds are annually paid by planters to railroad companies in charges on worse than useless tops, roots and packing.

HUNDREDS OF POUNDS WILL BE SAVED IN THE PLANTING. Instead of large holes and spreading out of roots, and working in the soil by hand, as now practiced, the planter will prepare his ground, stretch a strong line with tags tied at the right intervals, make a small hole with a dibble a couple of inches in diameter, stick the trees down the proper distance, and when the row is done, turn back and tramp thoroughly. The tramping is very important. I will now repeat

"DIRECTIONS FOR ROOT PRUNING.

Hold the tree top down, and cut all roots back to about an inch, more or less, sloping the cut so that when the tree is set the cut surface is downwards. Experience has shown that these roots are generally emitted perpendicularly to the plane or surface of the cut. This final pruning should be done shortly before planting, so as to present a fresh surface for the callous to form. If trees are to be kept some time, or shipped by a nurseryman, about two inches of root should be left, the planter to cut back as directed when the tree is set. About a foot of top should be left. More or less makes no difference. If the tree is well staked, three feet may be left without diminishing the growth much. I have had six foot trees, well staked, to grow finely, but to avoid staking and to secure a new straight body it is best to cut back short.

"Let all shoots grow until a foot or so long, when the straightest and best should be left and all others rubbed off.

"I could give the experience and endorsement of quite a number of orchardists who have practiced this method with uniform success, but space will not allow me to mention but one. He stands on the topmost round of the horticultural ladder, and as far as I know is the only man whose mind is so unbiassed by the prejudice of preconceived opinions, and his perceptions so intuitively correct, that as soon as the method and reasons for it were presented, he saw its truth. Without waiting for the slow demonstration of experience, he at once put it in practice on his great 900-acre peach orchard of 100,000 trees, which he was about to plant in Georgia. I wrote him recently as to how it turned out. Here is the reply: 'Dear Sir, I am glad to state that the close root pruning, which was practiced when planting our entire orchard of one hundred thousand trees at Fort Valley, Georgia, proved to be the most successful operation we ever practiced, less than one-half of one per cent. of the trees failing to grow and all making the most vigorous and even growth I have ever seen in any orchard in America. The orchard is now three years' old, and gave us an enormous crop of fruit this past season. I am thoroughly in favour of this system of root pruning.—Yours very truly, J. H. Hale.'

"And now in conclusion, in view of the fact that my individual effort of eight years have amounted to practically nothing, the question is how to bring about in the general handling of trees this radical but needed reform. I see but two ways. The first through the medium of the nurseryman and his catalogue, and the second through the bulletins of the experimental stations.

"Quite a number of nurserymen are now practicing my method exclusively, and with perfect success, in all their nursery transplanting operations, but they dare not advise the people to adopt it for fear of being accused of trying to induce them to kill their trees, so as to sell them more next season. Mr. Hale is the only exception I know in the whole country who comes out boldly for close root pruning. Now let all the rest make mention of the subject in their future catalogues; next let the State experimental stations make exhaustive experiments on all kinds of trees, vines and small fruits, planting some with mere stubs of roots—a half-inch—and others with five, ten, fifteen and twenty inch lengths, setting enough of each to allow of taking up some every year to demonstrate at once that beyond a length of two or three inches the quantity and size of the new roots is invariably in an inverse ratio to the amount of old roots left on. The more and longer the old, the less, more lateral and weaker the new ones.

"Let them subject trees of different ages and length of tops to four or five years of the same treatment, and the result will be the same. The older close root pruned, even with four foot tops will, if staked, quickly re-establish themselves on strong, deep, new roots and make fine trees, while the same age long root ones will become permanently surface rooted and dwarfed for ever. No amount of fertilising or cultivation will ever make them catch up."

HILL TRAMWAYS.

THE Report of the Commission to report on Hill Tramways in Ceylon affords some interesting reading. Though we cannot spare the space for the whole report, the extracts below will give valuable information that may be of use in similar schemes in some of our districts in South India:—

TRAMWAY vs. RAILWAY.

Assuming as the definition of the former, a line having a grooved rail laid flush with the roadway, the Commission is of opinion that tramways are not suitable. The rail is a heavy and expensive one, and between the rails and on the outside of each rail paving stones or concrete would be necessary to maintain the evenness of the roadway and prevent a dangerous blocking of the groove. Apart, too, from the excessive cost involved by the use of a grooved rail, the Commission is of opinion that such rails are unsuited to the comparatively heavy, powerful engines required to work on the steep gradients and sharp curves which would prevail on all the lines.

NATURE OF THE ROAD IN THE HILL DISTRICTS.

Speaking generally, the Commission finds that the existing cart roads are not of a nature to be really serviceable as tracks for narrow-gauge railways. They abound in the sharpest of curves, and the gradients are so extremely steep, often for several miles on end, that, without deviations in the form of zig-zags, locomotives

working without racks could not pull an appreciable load behind them. Working under the most favourable conditions, a locomotive on a gradient of 1 in 20 (and there are many miles much steeper than that) would, in addition to itself, pull less than twice its own weight, and in unfavourable weather much less, so that, after allowing for the weight of the vehicles, the influence of curves, and a necessary margin to meet ordinary conditions, the actual net load moved would be small.

The Commission has not sufficient information before it to express a decided opinion on the suitability of rack railways to surmount the long steep inclines, but obviously they would be much more expensive in construction.

The laying of railways on the roads would to a great extent unsuit them for heavy traffic, and the witnesses have differed as to the importance to be attached to this, although upon the whole they inclined to view the boon of a railway as being worth the partial sacrifice of the roads.

The estate factories have all been built in relation to the existing cart roads, and were entirely fresh alignments selected for the railways, new approach roads would be required to enable the traffic to get to the railway. This, however, does not apply in the case of the Badulla scheme.

GAUGE OF THE HILL RAILWAYS.

The Commission's conclusion on this point unhesitatingly is that the gauge to be adopted should be that of 2 ft. 6 in., which affords great advantages over the narrower gauge in the matter of locomotive construction. It is true that in some cases, at all events, a 2 ft. gauge would be more economical and more easily suited to the sharp curves, but as the Kelani Valley line (if constructed) is to be on a 2 ft. 6 in. gauge (and probably a large section of the northern line), there can be no doubt that the general economy and convenience of adhering to one gauge for all the branch lines would far outweigh the saving which might be effected in some cases by adopting a narrower gauge.

RATES TO BE CHARGED FOR FREIGHT AND PASSENGERS.

At the earliest stage of the inquiry it was quite evident that if the rates for freight now ruling on the Nanu-oya extension were adopted for any of the schemes under consideration, the estimates would in all cases show a prohibitive loss on working. Nor is this to be wondered at: the volume of traffic to be dealt with on these feeder lines is naturally very much smaller and running a much shorter average distance than that of the trunk line, while the gradients to be surmounted are extremely adverse. It is obvious therefore that the cost both per train mile and per ton mile must be heavy. The Commission has taken as its basis of calculation the rates of cart hire ruling in the district from point to point, and all the witnesses and representative bodies have agreed that they are willing to pay these rates to the railway if constructed. The Commission recommends that such rates should be the ones charged until any line shows a substantial clear profit more than equal to the charges for interest and sinking fund. The Commission recommends that the passenger rates should be on the same scale as those levied on the Nanu-oya line, except in the case of the Nanu-oya-Nuwara Eliya section, where rather higher mileage rates should be charged.

PROSPECTS OF OBTAINING ALL THE EXISTING TRAFFIC.

Experience in connection with some of the Ceylon Railways has shown that it is not always safe to rely on existing traffic finding its way to the railway. Once a railway has been constructed and its manifold advantages secured beyond recall, the traffic which was promised and reckoned upon has sometimes only in part been given to the railway. The Commission therefore recommends that the Government should refuse to enter upon any scheme unless the owners of the estates interested are prepared to agree that all their traffic will be placed upon the railway (at rates agreed upon), and in order to give binding effect to the agreement, consent to the imposition of prohibitive road tolls on estate produce and supplies. It is gratifying to record that all the witnesses examined by the Commission readily recognized the fairness and desirability of such a precaution, and approved in their common interests of the proposal.

SKETCH ESTIMATE OF THE VARIOUS SCHEMES CONSIDERED BY THE COMMISSION.

Details.		Nuwara Eliya and Uda Pussellawa.
Acres in cultivation	...	Acres 9,877*
Estimated tea crop, 1897	...	lb. 2,200,000

Details.	Miles	Nuwara Eliya and Uda Pussellawa.
Mileage of suggested railway	...	18
Rough approximation of cost, including rolling stock	R	810,000
Interest and sinking fund at 4 per cent.	R	32,400
Cost of working	R	73,475
Total yearly debit	R	105,875
Anticipated revenue	R	93,578
Net annual deficit	R	12,297
Net annual profit	R	—

	Badulla and	Pussellawa,	Matur
Dikoya.	Dimbula.	Passara.	
25,000†	24,071†	27,105†	11,851†
11,000,000	19,000,000	5,861,625	4,799,655
27	17	36	21
1,485,000	850,000	2,160,000	1,050,000
59,400	34,000	86,404	42,000
130,767	92,284	146,016	85,176
190,167	126,284	232,416	127,176
128,351	90,358	225,481	127,360
61,816	35,926	6,935	—
—	—	—	184

* Of this only 6,684 acres are in bearing, but as High Forest with 1,300 acres in cultivation, the traffic of which would come to the railway, is not included, the traffic as soon as the total acreage is in bearing will probably be quite 50 per cent. more than has been included in this estimate of receipts.

† Not the total acreage of the district, but only that which it is anticipated would use the railway.

‡ Of this only 23,348 in tea, and a large portion is not yet in bearing.

§ Not furnished by the District Planters' Association.

Annexure.

MEMORANDUM BY MR. P. A. MACKINTOSH.

Since the conclusion of the work of the Commission I have received from a well-known firm of Electrical Engineers in England, in reply to inquiries on my part, a list of electrical tramways or railways which they have equipped.

2. In this list there appears the case of the Bessbrook and Newry Railway, worked by electricity generated by water power through the medium of a turbine.

3. It has been in operation for 11½ years (although I had never heard of it, doubtless owing to its being such a short line), and it is claimed that it has throughout worked satisfactorily.* The predominant character of the traffic is goods or minerals.

4. Some of the details connected with it I subjoin:—

Length of line	... 3 miles 24 chains.
Steepest gradient	... 1 in 50.
Available fall of water	... 28 ft. [very little.]
Volume of flow of water per diem	... 3,000,000 gallons.
Average tonnage of goods carried annually	... 16,000 to 17,000 tons.
Average number of passengers carried annually	... 90,000 to 100,000.
Speed of trains	... 6 to 9 miles an hour.
Train mileage (in 1891)	... 21,468.
Cost of haulage per train mile, of which nearly 40 per cent. was for rental of water power (in 1891)	... 3·94d.

5. It is stated that, being an example of one of the earliest lines to be operated by water power, it is somewhat out of date, although it has operated successfully throughout; and certainly the cost of haulage seems to be extremely low.

This case at once suggests the possibility of working the Nanu-oya to Nuwara Eliya line through the medium of a turbine situated near Blackpool, utilizing the Nanu-oya in a similar manner, but with any improvements that may be possible. In the same way, for the line from Nuwara Eliya to Kandapola a generating station might be situated on the Kandapola-oya near Lover's Leap, while the section from Kandapola to Ragalla might possibly be treated in a similar manner from the adjoining stream, the capacity of which is not, however, so confident about.

I think the matter is worth the serious consideration of the Government, and if they desire it, I will, during the progress of the survey now being begun between Nanu-oya and Ragalla, have systematic gaugings of the three streams referred to taken before the rains set in, and levels taken to ascertain the available head of water.

a view to obtaining estimates, on the completion of the survey of the equipment of the line for being worked by electrical power generated by water power.

P. ARTHUR MACKINTOSH.

SAWELLA, March 30th, 1897.

MEMORANDUM BY THE HON. MR. T. N. CHRISTIE.

Although I do not think that a slow speed train ascending steep gradients round sharp curves at all lends itself to electrical propulsion, I concur in thinking that the water in the streams should be harnessed, and if it occasions no undue delay, the question of the feasibility and cost of the scheme reported upon.

It must be borne in mind that the system of having a driver for each vehicle would not suit Ceylon conditions. No vehicle could be expected to descend the gradients of the Nuwara Eliya line unless it was under the control of a driver of the same standing as the drivers on our existing line; and were one such required for each vehicle, the cost would be great. A system in which every vehicle, or almost every vehicle, had its own motor and yet the whole train was under the complete control of one driver, would I think be essential.

March 31st, 1897.

THOS. NORTH CHRISTIE.

STRAY JOTTINGS.

ONCE had a boy who was always drinking my whiskey. I tried again and again to catch him but without success. The last one morning he thought I had gone out, whilst as a matter of fact I was writing in the office, the doors of which opened off the dining room. I heard him moving about there and stop opposite the sideboard. I heard a bottle uncorked and the gurgle of something passing down somebody's throat. I quietly opened the door and found him with a pleased smile on his face, the whisky bottle in one hand, the cork in the other. "Boy," I said, "I've caught you at last stealing the whiskey." "What, Sar," said he, "I never steal, master left the cork out of the bottle last night, I put it back now," and with that he hammered the cork home with an indignant thump. I was so amused that I let the impudent scamp off.

How few planters try to understand their coolies. It is difficult enough, Heaven knows, and as an old friend of mine says, "the longer you live amongst them, the more you understand your ignorance of their ways." Yet I am sure that it pays to try to understand them. First learn to talk their language well so that there may be no possibility of mistakes arising; then try and learn their castes, for though castes cannot as a rule be recognised officially on the estate, a lot of friction may be saved by understanding them. Never tell a cooly a lie, if you value your reputation with them. Never nag at them, or they will leave you; treat them as children; give strict justice and no favour, and though you will be feared by evildoers, you will have public opinion with you. Never strike a cooly unless he really deserves it, but if you do, give him one licking that he won't forget and then treat him as forgiven; no nagging afterwards. Learn their proverbs—they are very clever—and their language well. A man who can chaff them will have little trouble with them, for they like yet fear chaff. And always be straight with them. Never forget yourself and that you are an English gentleman, and they will understand and respect you for it. For no one can tell "the pukka sahib" from the "kutchu" one quicker or more truly than the despised Tamil cooly; and finally do not be discontented with your Tamil and South Indian labour too quickly. I have worked with Tamils, Sinhalese, Malays, Javanese, Chinese, Kashmiris and E. Africans

of various tribes, and unhesitatingly say Tamils are best, from Madura for preference, next Javanese and Malays; then Sinhalese and Chinese, and worst of all Kashmiris and East Africans, and worse than that I don't want.

I AM told that hunting up in your lovely Neilgherry hills, if you start a sambur with your dogs on your own land and it cross your boundary before you have bagged it, you must whip off, as it would be trespass to follow and kill it on a neighbour's land. In Ceylon they have a capital unwritten rule there. If you start a stag on your ground, you may follow and kill it where you can; and if your neighbour starts a stag on his land and his hounds run into it on yours, he may follow and kill it there; but he may not start his hunt on your land and you may not start hunting on his, and if you have followed and killed your stag on his land, you must of course couple up at once and get back without doing any damage, and it is only courtesy if you are successful to send him a haunch of the venison. It may be a small thing, but these small courtesies knit the planters close together. To start hunting over your border without permission would be a gross breach of etiquette.

I NOTICE up here that most men screw their corrugated iron roofs down fast to the reepers. This does not allow for contraction and expansion of the iron and the screw holes where worn. There is a better plan than this in which no screws are used, only corrugated iron clips "S" shaped. Begin at the eaves, and over the lowest reeper fix one of the clips and into the part of the "S" clip which turns up lay the sheet of iron, finish the row, then move up to the next row, the top part of the "S" clip goes over the reeper and the lower sheet of iron, and the lower part again holds the upper layer of iron sheeting, and so on to the top of the store or other building; the ridging will need in windy districts to be screwed down. The clips should be of stout galvanised iron and 1½ inches wide; they can be got from Messrs. Walker & Co., Engineers in Kandy, Ceylon, and doubtless elsewhere. Corrugated sheet iron treated in this way is absolutely as good as new after years of wear, for the clip allows a certain amount of space for the contraction and expansion of the iron sheeting and it allows space for wind to pass through. I have known a store with the iron sheets screwed down the roof taken bodily off in a storm, but with ten clips through, the roof may rattle a lot in a gale. It won't blow off, and if you want to sell in old roofing, it commands a lot better price. Why does not some enterprising man start rickshaws and carriages for hire in Coonoor? I hunted high and low the other day for something to take me out to an estate. A rickshaw was an unknown quantity, few people knew what I meant, and when I suggested *jin*-rickshaw, I was told the way to the nearest bar, and that, barring jokes, I thought rough on this child. A carriage was not to be had, and finally I got a torture box called a bullock dandy, I think at Rs. 1-4-0 a mile, with a pair of the slowest "mads" I had ever sat behind; they did about a mile and a half per hour and the driver lost his way, and I was so comfortable that I nearly died of exhaustion before I got there.

WHY is it that the married ladies out here are generally the best looking? Is it that the good-looking ones

are all snapped up, and the others are the balance that have failed at home and have come out to live with brothers and married sisters to try, try, try again? I do not say that this is always the case, but can any one suggest a more likely reason? I have worried over it a long time, but cannot make up my mind.

HAS any one ever tried distillery scent from cinchona blossom? I have had some from coffee blossom. It was most delicious, but of course it did not pay to use coffee blossom for scent; that which I was given was a tin phial made by way of experiment, but cinchona blossom is also very sweet, and instead of rendering the plant valueless, improves it. Succirubra blossom would do as well as officinalis.

HAVE you ever heard of John Jones' dog "Tim?" No! well perhaps not. "Tim" was a mighty clever dog, there was nothing he could not do, his master avowed, but speak and read and write. One evening old John had been reading aloud to his family about a flying machine, with "Tim" lying listening on the hearth rug. And next morning when John went out, I'm blessed if he did not find that dog trying to make the tame peacock that lived round the house take him for a fly.

IN opening a new estate. After first selecting the site for the store, next select the site for the bungalow. This should be close to the store but not too close, about 150—300 yards away is best. When you have selected the site, peg it out and put in the roads and paths, and then before you do anything else plant fruit trees round it. How few men do this. They say, "Oh! what's the good? I shall never see them fruit," and the consequence is very few bungalows have good fruit trees round them. The expense is trifling. Rs. 50 the first year and Rs. 10 a year afterwards will go far towards making the place lovely and giving you plenty of wholesome fruit. I would suggest at this elevation (1) Tree Tomato, (2) Pear, (3) Plum, (4) Apple, (5) Papaya, (6) Grenadilla, (7) Loquat, (8) Passion Fruit, (9) Mulberries and the hardier oranges and mangoes. It will do no harm if fruit trees are planted round the coolie lines also. It will hide them a bit, and coolies like fruit as much as we do. The trees also add to the value of an estate. Neatness and a comfortable home look will put 10% or more on the price of the place very often.

HAVE you never seen a little bird a-sitting on a tree?
Have you never seen a planter agoing on a spree?
Have you never seen a civil servant over ears in debt?
Have you never seen a soldier who was ready for a bet?
Have you never seen a lady who wore someone else's hair?
Have you never seen a nigger who thought that he was fair?
Have you ne'er seen a grass widow with a husband in the plains?
Have you ne'er seen a hill station where it never never rains?
Have you never seen a spinster who liked to have her fun?
Well! you had only to go to Ooty and you'll see there everyone.

X. Y. Z.

HAVE you ever heard your nickname? No! yet probab-

ly you have one. Natives are very fond of nicknaming their masters; but it is seldom you hear your own name, though you may know your neighbours'. I give you half a dozen, and very smart they are: (i) "*Whisk Soda Durai*" or "*Peg Durai*" needs no explaining. (ii) "*Nerupoo Durai*" a very red-faced man. (iii) "*The Bashaw*" a high-handed master. (iv) "*The Stork*," a tall man with hooked nose. (v) "*Canaddy Durai*," a man with glasses. (vi) "*The Goat*," a man with a heavy nose and fair hair, whiskers or moustache and a tuft of beard on his chin. (vii) "*Bwana Simba*," the lion bwana (master), a big burly man with a red beard. (viii) "*Bwana Chai*," the leopard master, an active watchful man. (ix) "*The Needle*," a very thin man with sloping shoulders, colorless hair and eyebrows and a big mouth. (x) "*The Owl*," a small man with a bulbous head, big eyes, usually wore a big beard and moustache; appeared without them one day and his hair cut very short and was named at once. And I will end with a couple of rather clear English ones. (i) *He* was called "*Brown Windsor*," for his name was Windsor and he was very brown and he never used soap. (ii) *She* was young and very pretty and was called "*Pears' Soap*" because, like the baby, *she* was never happy till she got it.

Bye products.—

A capital oil can be expressed from tea seed. It is bitter. Burns well, and if applied to wood has the property of making to a great extent not proof.

Prunings, managras, etc., damped and pressed make very good fuel, burning with a very fierce flame.

Odds and ends of cinchona shavings can be boiled down to an extract, which is almost if not quite as good an antidote against fever as the white sulphate of quinine crystals. It will contain quinine, quinidine, cinconine and chinconidine.

Have you ever heard of tea made of coffee leaves? It is made the same way as tea. The young leaves are picked, withered, rolled, fermented, and fired, and they say it tastes well and contains caffeine instead of theine.

LETTERS TO THE EDITOR.

RECIPES WANTED.

SIR,—I would be much obliged if some of your correspondents would kindly give me recipes for the following:—Fish Moulé (Pillau). Kedgerree. I would also like a recipe for a good curry powder and mango chutney.

DURBAN.

Yours truly,
ANGLO-INDIAN

TAMIL GOOSE AND BENGAL GANDER.

SIR,—From the reply of the Government of India to the Ceylon Government in reference to recruiting labour from famine districts for the Ceylon estates, it is very plain that the Indian Government has no wish to promote emigration, and the event of recruiting for Ceylon being carried out, it would not be done before special legislation to protect the emigrants had been passed. To the unprejudiced on-looker it would seem that if a special law is required for the Bengal coolies the Madras Government has been highly culpable in allowing free labour traffic to go on for years, and as the Government of India has known of the traffic, it must clearly be convicted as an accessory to the fact.

An explanation as to why the Bengal gander needs served up with a different sauce to the Tamil goose would be inter-

g, but we do not suppose it will be forthcoming. The letter is signed by Mr. Denzil Ibbetson, C. S., C.S.I., Secretary to the Government of India, and from his allusion to "Coffee Estates," is evident that his knowledge of Ceylon is of antiquated character, probably derived from an out-of-date Directory, and leads to suggest that that gentleman's education would not suffer by undergoing a course of up-to-date commercial geography.

ANON.

HOUSE-KEEPING FOR BACHELORS.

SIR,—I was very glad to read "Planter's Wife's" notes on housekeeping for bachelors as it will be a help to many. I am not a bachelor myself, but keeping house for one, and his pay is only a little more than the sum mentioned. So we have to be careful in everything to be able to make ends meet.

"Planter's Wife" leaves out the important item of liquor, and is important in planting districts. Even if the master of the house takes very little, the men who look in as they are dining by (and we have a good many) all expect a peg. I don't mean that we grudge it, but it all tells. Tea is not a favourite beverage with them. I think 12 Rs. a month quite enough for a general servant, though a lady here is giving her cook 20 Rs. a month. My "general" bakes bread every other day in addition to his other work, and makes it very well too. Not with baking powder, but plantain yeast after Mrs. E. B. Watson's recipe (Messrs. Traill and Co., 20 British India Street, Calcutta), and we never run short of bread in consequence.

Tomatoe Sauce.—I send an easy recipe for making a delicious sauce for tomatoe salad. Choose well-shaped ones. Peel carefully, slice and lay in a dish. Into a bowl put a dessert spoon of sugar, one of vinegar, one teaspoon of oil, pepper and salt. Pour on a dessertspoon of cream and two of milk, mix well and leave till wanted. If the morning's butter milk is sweet, use instead of milk and cream.

Pastry Board.—I know from experience the trouble one has to get a suitable place to make pastry on. Small tables are often not steady on their legs and rock about in an aggravating way, and slabs often crack or shrink at the joints. So in despair I bought a yard of white American leather and nailed it firmly on to the lid of a large store box in a cool back verandah, and have been very well satisfied with the result. You have plenty of room and everything at hand. After use, the leather is well washed with warm milk and water, dried and covered with a newspaper.

NIECE.

AMERICAN MARKET FUND.

ALL PROPRIETORS AND AGENTS OF TEA GARDENS.

DEAR SIRS,—The General Committee have recently circulated to all members and branches of the Association, as well as to the various Planters' Associations with whom they are in correspondence, copies of the last Interim Report of the American and Foreign Tea Committee, in connection with the London Branch of the Association. This Report, which is dated 23rd February 1897, gives in a brief and concise form the results of the operations which have been carried on in America, during the past year, by Mr. Blechynden, the Association's representative, in conjunction with Mr. Mackenzie, representing Ceylon, with the purpose of bringing the teas of both India and Ceylon to the notice of the American public. The London Committee are satisfied that everything possible is being done to awaken interest in British-grown teas, and the General Committee agree with the Committee in London that Mr. Blechynden's Report on his work for 1896, which was circulated with the Report of the American and Foreign Tea Committee in London, affords strong evidence of the value of the work done, and of the necessity of continuing the campaign. Mr. Blechynden's versatility in striking out new modes of attracting attention to

British-grown teas and also in adopting constantly changing styles of advertisement deserves, in the opinion of the General Committee, every commendation, and the results of his own and Mr. Mackenzie's energy are very strikingly shown in the following table of statistics, showing the progress made in the use of Indian and Ceylon teas in North America during the last six years. These figures have been carefully revised by Messrs. Gow, Wilson and Stanton, and may be taken as approximately correct:—

INDIAN AND CEYLON TEA TAKEN BY NORTH AMERICA DURING EACH OF THE LAST SIX YEARS.

	1896.	1895.	1894.	1893.	1892.	1891.
Indian...	5,205,405	4,059,595	2,428,230	2,111,247	1,586,426	1,342,321 lbs.
Ceylon...	4,268,614	3,735,590	2,295,140	1,870,590	1,489,474	991,981 lbs.
Total lbs.	9,474,019	7,792,185	4,723,370	3,981,837	3,075,900	2,334,302 lbs.

With these figures before them, and also bearing in mind that the present year's crop from both India and Ceylon is likely again to show a substantial increase, the General Committee fully agree with the Committee in London that there should be no relaxation made at present in the effort to win the American Market, and they have consequently instructed me again to ask you for further contributions from Gardens under your Agency, on the same basis as last year, viz., at the rate of four annas per acre on the area under cultivation, and half an anna per maund on the production. The amount subscribed in response to my Circular No. 164—O., of 22nd April 1896, was Rs. 1,03,674-8 as., as against Rs. 92,575 collected in 1895. This included as in the previous year liberal contributions from the two Planters' Associations in the Travancore district.

The Committee trust that the amount forthcoming this year may not at any rate be less than what was contributed in 1896, and they hope that those who have hitherto held aloof will realise the importance of now contributing for the general interest and advantage. They will also be glad if the support now asked for could be intimated to me not later than the 15th June on the annexed form.

"INDIAN TEA ASSOCIATION." }
ROYAL EXCHANGE BUILDING, }
CALCUTTA, 15th April 1897. }

Yours faithfully,
W. PARSONS,
Secretary.

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma contains per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric acid.

Orders booked for the coming crop of seed from the parent trees of above analysis at Rs. 3 per 1,000.

Manager, ARIENKOW ESTATE,
SHENCOTTAH,
Tinnevely.

COFFEE.

We learn that a marked effect of *E. lithosperma* on coffee grown under its shade is shown in the increasing weight of the bean. We are informed of an instance where, previous to shading, it took 6.25 bushels to the cwt. Since the establishment of shade, a gradual improvement has taken place. Last year it took just five bushels, and this year it has gone down to 4.67 bushels to

the cwt. "I don't think," says our informant, "it possible to produce stronger evidence in its favour. There is nothing theoretical about this."

Improved seed.

Mr. L. W. Grey, of Pykara, Nilgiris, has sent us the following table of comparative analyses of various samples of seed we forwarded him from Mysore and elsewhere, and invites comment thereon:—

ANALYSIS OF COFFEE SEED.

District.	Moisture.	Soluble with parchment.	Ash without parchment.
Nellacotta ...	11.257	2.744	2.098
Coonoor ...	11.691	2.192	2.674
Coorg & Mysore ...	11.872	2.908	2.880
My seed ...	3%	7%	3.71

The analyses were made by Surg.-Major vanGeyzel, of Madras.

There is without doubt a very great difference between Mr. Grey's seed and the others. The greatest difference lies in the moisture column. The drier the seed, the higher the percentage of other constituents, be they soluble or insoluble ash, or anything else. As they stand we cannot say the comparative analyses are at all conclusive. For were each sample of the same degree of dryness, the differences now existing in the last column, *i.e.*, ash without parchment, would, *probably*, be largely done away with.

The question is obviously one for practical experiment, for without a very searching comparative analysis, little can be held to have been proved one way or the other. Mr. Grey must not be discouraged by our critical remarks. May they on the contrary spur him on to fresh investigations in the extremely interesting and valuable line of research he has taken up.

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.

(SOMETIME AGRICULTURAL CHEMIST IN COORG, SOUTH INDIA, TO MESSRS. MATHESON AND Co.)

[Reprinted from the "Madras Mail" by the kind permission of the Editor.]

(Concluded from our last.)

Chief needs.

From the preceding data and analysis it would appear as if the chief requirements of the coffee tree are phosphoric acid and nitrogen; unless the surface soil has been lost, there would appear to be but a small demand for potash. Potash salts are very soluble in water, and appear to be easily assimilated by the plant. These are abundantly supplied by the slow decomposition of the feldspar and mica schist in the rocks, and the stray matter of the soils, together with lime and magnesia; but the accumulation of the salts in the land is prevented by the monsoon rains. If they are required, as in analysis C. above, the best thing would be the use of ferns for bedding cattle, particularly bracken, where such are procurable. The ash of the bracken fern, according to Lester Arnold confirmed by John Hughes, contains potash 42 per cent. and phosphoric acid 10 per cent., and is a very valuable manure wherever potash is required, and will well repay the trouble of collecting the fern. Should ferns be unprocurable and the addition of a potash salt necessary, the best thing would be kanite. The buyer should stipulate for

25 per cent. sulphate of potash at the very least. But potash is not necessary as a rule, and should never be used in excessive quantities, as it increases the quantity of pulp at the expense of the bean. This, however, does not apply to nitrate of potash which acts more like ammonia sulphate than anything else. Wherever there is plenty of nitrogen in the soil, the leaves of the trees are large and of a beautiful glossy green, but the bean is small unless there is a fair share of phosphates present also. This leads to the conclusion that the coffee tree must have nitrogen and phosphates in the manure. Whether potash should be included or not depends greatly on the nature of the soil. For instance, it would be unnecessary with a retentive soil like B. above. With some soils the analyses show a weak spot at once, and we can easily select a single manure to meet the exigencies of the case; in others the manure must be diffusive to cover the whole range of the necessities of the plant and the poverty of the soil.

The following represents a good type of a complete manure of a diffusive manure:—

- 1 cwt. Fine bone meal.
- 1 " Pure fish.
- 1 " Superphosphate of lime 40 p. ct. soluble.
- $\frac{1}{2}$ " Sulphate ammonia.
- $\frac{1}{2}$ " Kanite 25 per cent. potash sulphate.

This applied after the heavy rains are over, at the end of July or in August, will supply plant food in a form immediately available for the plant's requirements, and will greatly assist in the perfect development of a healthy bean. It is stimulating, but holds the plant food in varying degrees of preparedness ready for the use of the plant from season to season; 4 cwt. per acre mixed with 1 cubic yard of burnt earth or two good loads of cattle manure is sufficient for one acre per annum. It is well suited to the raising of supplies.

In conclusion, attention should be paid to the advantages of green manuring.

Nitrogen is a most expensive item in manures, but certain plants readily take it up from the air in some way little understood at present. Lucerne, clover, mustard, &c., may all be planted under the coffee; they are excellent manures, as they derive most of their nitrogen from the air and send their roots deep into the ground in search of food. The growth of white mustard is so rapid that it may be used to choke out other weeds by sowing two or three crops in succession and fork them in. Green manuring, if carefully carried out, should supply all the necessary feed for the bullocks used on the estate and protect the soil from the action of the sun during the dry weather. This system of cultivation is specially suited to poor soils such as shown in the analysis C. above. It will also improve the condition of heavy and retentive lands. If put to force, the land should be limed once in three years or so, and the plants should be grown in rotation. In this way it will be possible to clean the land and free it from an excess of injurious salts. The coffee tree is wanted as a permanency, and the best way of keeping the land healthy is to grow a rotation of annuals under the coffee, and as far as possible a rotation or diversity of shade over it. Whenever a shade tree shows signs of becoming a surface feeder, it should be rooted out; slow growing shade should be put in to take the place of the quick grown shade if it dies off. By these measures it will be possible to prevent the land in a great measure from becoming coffee sick, which it does by becoming infested with microscopic fungi and bacteria when kept under one crop too long. The investigations into potato and vine diseases and clover sickness show this to be the main cause of land refusing to bear on crops of continued succession. It is from this cause that the great number of coffee supply plants fail, while mealy-bug assists in the devastation. All these pests can be eradicated by proper treatment at the right season.

II.

COFFEE BLOSSOM.

A more beautiful sight than a good field of coffee out in full blossom is seldom seen. Overhead there are the varied greens of the foliage of the shade trees, while the coffee looks as if covered with snow, only a few green leaves showing up here and there. The change is almost startling in its suddenness. What was a field of dark, glossy green in the evening is in the use of good coffee, where all the blossom comes out together, changed in the course of a single night to a sheet of pure white; this condition lasts two or three days, when the blossom fades and in a week the coffee has resumed its ordinary glossy dark green appearance. While the blossom is out, the perfume is so strong that with the wind blowing over the estate it can be felt quite half a mile off. When not too strong the smell is very pleasant, but where a whole field is out in full bloom, on passing through it the effect is anything but agreeable. The odour is so intense as to be quite sickening to bilious people, while with others it induces an attack of fever. It, however, contains the promise of a good crop, and it only lasts two or three days. In South Coorg three good shows of blossom in one season on any one estate are most unusual; and the planter, to whom a good blossom well set means a comfortable balance at the banker's, is by no means unwilling to put up with this temporary inconvenience even if it does bring on fever. The appearance of the blossom is the most anxious period of the year; should the rains fall, the blossom may prove abortive. A touch of rain is generally sufficient to give a good blossom, but a great deal depends on the condition of the soil and the trees. I have seen a good blossom from as little as half an inch of rain. Where the cultivation is superficial, a quarter of an inch may start the blossom, and unless more rain brings it on, it is apt to be partially open, and in this condition is often shrivelled up by the sun. Should rain fall heavily within twenty-four hours of the appearance of the blossom, the effect is apt to be very disastrous. Whether it acts by washing off the pollen, or by hastening decay so that insects have not time to fertilise it, or by knocking off the blossom altogether, it is an important factor as regards the production of the seed. And the planter who sees his blossom set nicely without having rain on it has a great weight taken off his mind. He is, however, still anxious as more rain is in general required to bring it on. His crop prospects depend to a very large extent on these early rains. Even under the most favourable circumstances a very large percentage does not set. If all came on, and the trees could ripen the berries, the crop might be estimated by tons, not cwt., per acre. With six by six feet coffee, twelve hundred trees per acre, about 140 berries on an average per tree, will give 1 cwt. per acre. An average cluster of flowers is from ten to fifteen, and there are often on a good branch twelve to twenty clusters. Taking the lower of these numbers, and supposing all the trees to be of equal growth, and that there are only sixteen bearing branches per tree, we have $\frac{10 \times 12 \times 16}{140} = \frac{92}{14}$, or 13 cwt. 2 qrs. and 24 lbs.

Yet a good average crop for the district is from 4 to 6 cwt. per acre. Exceptional estates in exceptional seasons have given more than double these results. Blanks and want of cultivation will probably account for much of this deficit. Exceptional seasons show that a great deal depends on the weather, but where the weather is most favourable, there is still a large deficit. The influence of inopportune rain is seen in a patchy blossom. Where this occurs the loss is very great.

Speaking of the failure of the blossom to set, Hull remarks: "This is most commonly the result of inopportune rain while the flowers are out; or it may follow a prolonged season of drought and be due to a weakly condition of the plant." Granted; but why do the trees, when all the conditions are

favourable, not yield a crop proportionate to the blossom that came out? This subject has commanded my attention for the last five blossoms in South Coorg, all of which I have seen, and in no case has the crop been equal to the show of flowers. Then again, one of the most surprising and perplexing results of my experiments was the fact that the unmanured plots were superior to the manured estate, and not much inferior to the manured plots. The question was evidently one of nutrition, and I was forced to the conclusion that the season at which the manures were applied had a most marked effect on the yield of crop. A study of the effect of nitrogen on plants throws much light on the subject, and I may, therefore, quote from the Bulletin of the New York Agricultural Experimental Station the following:—

"The influence of nitrogen in its various forms upon plant growth is shown by at least three striking effects. First, the growth of the stems and leaves is greatly promoted, whilst that of buds and flowers is retarded. Ordinarily most plants, at a certain period of growth, cease to produce new branches and foliage, or to increase those already formed and commence to produce flowers and fruits, whereby the species may be perpetuated. If a plant is provided with as much available nitrogen as it can use just at the time it begins to flower, the formation of flowers may be checked, while the activity of growth is transferred back to and renewed in stems and leaves which take on a new vigour and multiply with remarkable luxuriance. Should flowers be produced under these circumstances, they are sterile and produce no seed. Second, it deepens the colour of the foliage, which is a sign of increased vegetable activity and health. Third, the relative proportion of nitrogen in the plant is increased in a marked degree."

Now, it is evident if the foregoing is true, and it is supported by the evidence of the first agricultural scientists of the day, the question of the supply of nitrogen to the coffee plant is of the greatest practical importance to the planter. The tree must have nitrogen, especially where leaf disease is virulent, but there must not be an excess when the plant blossoms, or the blossom will not set. (Here is a hint for tea planters. When your plants will blossom and run to seed, apply nitrogenous manures at once; the soluble forms will be most useful, such as potash nitrate, or Chili saltpetre, or ammonia sulphate.) The coffee planter wishes his plants to seed and, as a rule, the tea planter does not, so the rule of manuring must be inverse. It is evident that in South Coorg if a nitrogenous manure is applied just after crop it will be brought into action by the showers that start the blossom, and this is enforced by the fact that manuring in August and September gives better results, and that the plots with no manure yield better than the estates manured just after crop. Not only must the time at which the manure is applied be carefully regulated, but the quantity also. We have seen that an excess of nitrogen was fatal to supplies; we now see that it is equally fatal to the blossom when it is applied at the wrong time. In South Coorg, the first break after the burst of the S. W. Monsoon, as I have previously pointed out, is the best time to manure, especially where the soil is rich in nitrogen or nitrogenous manures are used. Where the trees are in full vigour while the crop is ripening up, and a good show of wood is there for the next crop, so long as the trees are not overpruned so as to force an excess of sap into the remaining branches, a healthy spike will be developed and a good blossom got with moderate rain, which on well cultivated land that has been judiciously manured will set well. Injudicious manuring, excessive pruning, and want of systematic handling are undoubtedly as much the cause of blossom failure as any freaks of the weather; and they are controllable where there is a capital and labour, while the weather is not. In my opinion the greater number of failures of blossom to set are traceable to preventible causes. Of course, a hail-storm on the blossom is fatal and beyond the best planter's skill to control. A heavy thunderstorm is almost as bad, but a gentle drizzle does not appear to do much harm, nor do heavy dews. A good shower just after the blossom has set will give the young buds a good

start, and if the land is in good heart, and the trees also, there will be little fear of the berries dropping off.

The proportionate fertility of the coffee blossom in South Coorg is coincident with the appearance of a greater or less number of bees. In 1887 bees were very numerous and the crop good; in 1888 trees were not so many; in 1889 there were fewer still; in 1890 the absence of the usual swarms was marked, and the crop a miserable one; in 1891 they were almost as numerous as in 1887, and by the last accounts the crop is going to be up to the average. After studying Darwin and Lubbock and Pasteur, I have no doubt but that the bees and the other insects play an important part in the fertilisation of the blossom. I have watched the bees passing from flower to flower covered with pollen, and they appeared quite capable of carrying on the fertilisation of the plant. However, a plot of Liberian intermixed with Arabian has been planted, and if a cross is obtained from them before the branches touch, I would be inclined to consider that, taken in conjunction with other evidence as a proof—if the cross was general—that the insects had been instrumental in causing it. Several of the Coorg planters have confirmed me in my observations of the number of bees being proportionate to the fertility of the blossom. Now if nature provides the bees, it is the planter's duty in his own interest to provide them with a healthy blossom to fertilise. If the blossom is healthy, the powerful odour, which in excess is so unpleasant to us, will be wafted to a great distance and will serve to attract the bees, to whom it tells of acres of sweets. I mentioned at the beginning that the odour was on a good field so strong as to produce sick headache and feverish symptoms, and I have noticed that it was where these symptoms were most intense the blossom generally set well. Judging from this, the strength of the perfume is characteristic of a healthy state of the flowers and attracts a greater number of bees than when it is weak, so that the work of fertilisation is more actively carried on, and there is a greater probability of the coffee blossom being equally fertilised. Hence we may conclude that a good healthy blossom is a strong smelling one, the smell being intended by Nature to attract the bees and other insects necessary to the fertilisation of the blossom and the production of the seed.

TEA.

Lipton and Ceylon.

We learn from the *Ceylon Over-land Observer* that the great Mr. Lipton has just finished a visit to Ceylon. Most of his time was spent in visiting his numerous estates. In questioning him about Ceylon prices, are they to continue to go lower, he thinks it entirely depends on quality; if men will try for quantity, instead of quality, prices will probably drop, but if planters will attend more to quantity without going to the extreme of very fine picking, prices will improve with little or no loss of quantity.

He advises Ceylon men to stick to their ground in America, Russia and Germany, and try and push their teas there still further. He thinks that nothing is to be feared from China soon, when their teas are machine made.

And above all, his advice is "Advertise," and Indian Planters might well follow his advice.

London Market.

The quantity brought forward has been comparatively small, and prices, says the *Produce Market Review*, especially for the common grades, have shown an irregular tendency. The supply now includes a considerable proportion of the lower descriptions, which in many cases are poor in cup, especially the

Calcutta bought teas, which could only be sold at low rates. As much of the tea to come forward will consist of these kinds, current rates will hardly be maintained until there is a distinct improvement in the demand. The supply of the better sorts, although not large, is sufficient, and brought about previous prices, and these rates will probably be maintained as the quantity to arrive is not likely to prove excessive. For the finer descriptions the market is somewhat irregular, but the changes were not important. The more desirable lots fetched quite former rates, while the thin liquoring teas showed a declining tendency. The figures for the past month, as compared with March of last year, are fairly satisfactory. Imports were nearly 1,500,000 lbs. larger, or 7,059,000 lbs. against 5,619,000 lbs., and the deliveries have increased 800,000 lbs., the figures being 11,194,000 lbs. and 10,380,000 lbs. respectively, the increase showing the large increase of 5,500,000 lbs. At the present sales only 19,624 packages were catalogued, 2,619 being withdrawn. For the "last of the season's" crop of the Assam Company's growth there was active bidding, and prices were firmer than for those sold in the previous season, while as the majority of the more popular gardens have disposed of the past season's produce, the market probably continue firm for all the better grades.

THE NEW AMERICAN TEA LAW.

THE following is the full text of the new law to prohibit the importation of impure and unwholesome tea:—

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled:

Section 1.—That from and after May 1, 1897, it shall be unlawful for any person or persons or corporation to import or bring into the United States any merchandise as tea which is inferior in purity, quality and fitness for consumption to the standards provided in Section 3 of this Act, and the importation of all such merchandise is hereby prohibited.

Section 2.—That immediately after the passage of this Act, on or before February 15th of each year thereafter, the Secretary of the Treasury shall appoint a board, to consist of seven members, each of whom shall be an expert in teas and who shall prepare and submit to him standard samples of teas; that the persons so appointed shall be at all times subject to removal by the said Secretary; that the board shall serve for the term of one year; that vacancies in the said board occurring by removal, death, resignation, or any other cause shall be forthwith filled by the Secretary of the Treasury by appointing such appointee to hold for the unexpired term; that said board shall appoint a presiding officer, who shall be the medium of all communications to and from such board; that each member of said board shall receive as compensation the sum of fifty dollars per annum, together with all necessary expenses while engaged upon the duties herein provided, shall be paid out of the appropriation for "expenses of collecting the revenue from customs."

Section 3.—That the Secretary of the Treasury, upon the recommendation of the said board, shall fix and establish uniform standards of purity, quality and fitness for consumption of all kinds of teas imported into the United States, and shall procure and deposit in the custom houses of the ports of New York, Chicago, San Francisco, and such other parts as he may determine, duplicate samples of such standards; that said Secretary shall procure a sufficient number of other duplicate samples of such standards to be sent to the importers and dealers in tea at all ports desiring the same, at the cost of the importer. All teas, or merchandise described as tea, of inferior quality and fitness for consumption to such standards shall be deemed within the prohibition of the first section hereof.

Section 4.—That on making entry at the custom-house of any tea or merchandise described as tea, imported into the United States, the importer or consignee shall give bond to the collector of the port that such merchandise shall not be removed from the warehouse until released by the collector, after it shall have been duly examined.

reference to its purity, quality and fitness for consumption; for the purpose of such examination samples of each line in every invoice of tea shall be submitted by the importer or consignee to the examiner, together with the sworn statement of such importer or consignee that such samples represent the true quality of the tea and every part of the invoice and accord with the specifications therein contained; or in the discretion of the Secretary of the Treasury, such samples shall be obtained by the examiner and compared by him with the standards established by this Act; and in cases where said tea, or merchandise described as tea, is entered at a port where there is no qualified examiner, as provided in Section 7, the importer or consignee shall in the manner aforesaid furnish, under oath, a sample of each line of tea to the collector or other revenue officer to whom is committed the collection of duties, and the collector or officer shall also draw or cause to be drawn samples of each line in every invoice and shall forward the same to a duly qualified examiner as provided in section 7; *Provided, however*, that the bond above required shall also be conditioned for the payment of all custom-house charges which may attach to such merchandise prior to its being released or destroyed (as the case may be) under the provisions of this Act.

Section 5.—That if, after an examination as provided in Section 4, the tea is found by the examiner to be equal in purity, quality, and fitness for consumption to the standards hereinbefore provided, and no re-examination shall be demanded by the collector as provided in Section 6, a permit shall at once be granted to the importer or consignee declaring the tea free from the control of the custom authorities, but if on examination such tea or merchandise described as tea is found, in the opinion of the examiner, to be inferior in purity, quality and fitness for consumption to the said standards, the importer or consignee shall be immediately notified, and the tea, or merchandise described as tea, shall not be released by the custom-house, unless on a re-examination called for by the importer or consignee the finding of the examiner shall be found to be erroneous: *Provided*, That should a portion of the invoice be passed by the examiner, a permit shall be granted for that portion and the remainder held for further examination, as provided in Section 6.

Section 6.—That in case the collector, importer or consignee shall protest against the finding of the examiner, the matter in dispute shall be referred for decision to a board of three United States general appraisers, to be designated by the Secretary of the Treasury, and if such board shall, after due examination, find the tea in question to be equal in purity, quality and fitness for consumption to the proper standards, a permit shall be issued by the collector for its release and delivery to the importer; but if upon such final re-examination by such board the tea shall be found to be inferior in purity, quality and fitness for consumption to the said standards, the importer or consignee shall give a bond with security satisfactory to the collector, to export said tea, or merchandise described as tea, out of the limits of the United States within a period of six months after such final re-examination; and if the same shall not have been exported within the time specified, the collector, at the expiration of that time, shall cause the same to be destroyed.

Section 7.—That the examination herein provided for shall be made by a duly qualified examiner at a port where standard samples are established, and where the merchandise is entered at ports where there is no qualified examiner, the examination shall be made at that one of said port which is nearest the port of entry, and that for this purpose samples of the merchandise obtained in the manner prescribed by Section 4 of this Act shall be forwarded to the proper port by the collector or chief officer at the port of entry; that in all cases of examination or re-examination of teas or merchandise described as tea, by examiners or boards of United States general appraisers under the provisions of this Act, the purity, quality and fitness for consumption of the same shall be tested, according to the usages and customs of the tea trade including the testing of an infusion of the same in boiling water, and if necessary, chemical analysis.

Section 8.—That in cases of re-examination of teas, or merchandise described as teas, by a board of United States general appraisers in pursuance of the provisions hereof, samples of the tea or merchandise described as tea, in dispute, for transmission to such board for its decision, shall be put up and sealed by the examiner, in the presence of the importer or consignee if he so desires, and transmitted to such board, together with a copy of the finding of the examiner, setting forth the cause of condemnation and the claim or ground of the protest of the importer relating to the same, such samples, and the papers therewith, to be distinguished by such mark that the same may be identi-

fied; that the decision of such board shall be in writing, signed by them, and transmitted together with the record and samples within three days after the rendition thereof, to the collector, who shall forthwith furnish the examiner and the importer or consignee with a copy of said decision or finding. The board of United States general appraisers herein provided for shall be authorized to obtain the advice, when necessary, of persons skilled in the examination of teas, who shall each receive for his services in any particular case a compensation not exceeding \$5.

Section 9.—That no imported teas which have been rejected by a customs examiner or by board of United States general appraisers, and exported under the provisions of this Act, shall be reimported into the United States under the penalty of forfeiture for a violation of this prohibition.

Section 10.—That the Secretary of the Treasury shall have the power to enforce the provisions of this Act by appropriate regulations.

Section 11.—That teas actually on shipboard for shipment to the United States at the time of the passage of this Act shall not be subjected to the prohibition hereof, but the provisions of the Act entitled "An Act to prevent the importation of adulterated and spurious teas," approved March 2, 1883, shall be applicable thereto.

Section 12.—That the Act entitled "An Act to prevent the importation of adulterated and spurious teas," approved March 2, 1883, is hereby repealed, such repeal to take effect on the date on which this Act goes into effect.—*American Grocer.*

DISTRICT ASSOCIATIONS.

SHEVAROYS.

PROCEEDINGS of the Monthly Committee Meeting held in the Victoria Rooms, Yercaud, on Monday, March 23rd, 1897, at 1 P.M., when there were present:—Messrs. C. Sice, C. Rahm, Junr., J. C. Large, W. W. Hight, R. Gompertz, E. H. King-Harman, C. G. Lechler (*Chairman*), H. W. Leeming (*Honorary Secretary*), and, as a *Visitor*, Mr. Howard O. Newport, *Honorary Secretary*, Lower Pulneys Planters' Association.

1. Notice calling the Meeting was taken as read.

2. Read Circular from the Chairman, U. P. A. S. I., re Act XIII. of 1859 and Counsel's Opinion thereon.

Resolved "that the Honorary Secretary be requested to forward to the Secretary, U. P. A. S. I., Mr. Robert Gompertz' views on the subject."

3. Read and recorded, with satisfaction, letter dated 10-2-97 from the President, Salem District Board, in reply to one from the Honorary Secretary, stating (i) that the necessary survey of the proposed cart road, from Salem to Yercaud, has been ordered to be taken by the P. W. D.; (ii) that the constitution of Yercaud into a Union, under the direct management of the Salem District Board, has been sanctioned.

4. Read and recorded correspondence with the President, Salem Taluk Board, re station roads.

5. Read letter, dated 11-3-97, from Mr. J. C. Large re reward to a Police Constable for the detection of a coffee stealing case.

Resolved "that the matter stand over till the next Committee Meeting."

6. The following papers were laid on the table:—i. *Proceedings* of the Annual General Meeting of the Wynaad Planters' Association, Central Travancore. ii. *Agricultural Ledgers*—Nos. 22, 24, 25 of 1895, and 30, 31, 32, 33, 34, 36, 37, 38 of 1896. iii. *Bulletin No. 5*—Agricultural Series—"A new method of tree planting." iv. *Planting Opinion* for January 9th, 23rd; February 6th, 20th; March 6th, 20th of 1897.

With a vote of thanks to the chair the Meeting terminated.

C. G. LECHLER, *Chairman*,

H. W. LEEMING, *Honorary Secretary.*

SOUTH MYSORE.

THE Annual General Meeting was held in Saklasapur on 4th and 5th March. On the first day there were present: Messrs. J. Aird, F. L. Allen, R. A. Anderson, J. E. Butcher, H. P. Cobb, J. G. H. Crawford, W. L. Crawford, W. M. Daly, C. F. deSalis, G. H. Eicke, A. M. Elder, J. G. Hamilton (*President*), F. M. Hamilton, J. A. Harris (*Hon. Secy.*), G. Horne, C. Hunt, P. Hunt, T. Hunt, L. F. Lake, C. Lake,

F. E. Limouzin, A. R. Park, E. M. Playfair, E. P. Playford, S. Sladden, J. Lee Stewart, and the following visitors: Messrs. H. M. Martin, Wachter, Taylor and Hudson. On the second day Messrs. Aird, Allen, L. F. Lake, C. Lake and Park were absent. The proceedings of the last General Meeting having been confirmed, the President made the following opening speech:—

"GENTLEMEN,—As you have a great deal of important business to discuss, and I hope a great deal to say about it, it is a good thing that you wisely determined to take two days over your Annual General Meeting; it would have been quite impossible to satisfactorily dispose of all our business in one short sitting, and unaccustomed as we are to this sort of thing, a long sitting means that after the first half everyone is tired and wants to break off. I have so much to say later on that I will confine myself to giving notice as to procedure, which will be somewhat changed this year. The Honorary Secretary's Report has always been cut about and amended and sent out as the Report of the Association to the world. This is for some reasons unsatisfactory, and you will not be asked to discuss the Report, which is the Honorary Secretary's Report to you. The items in the Report will be taken up in the order in which they stand for discussion and instructions to next year's officers, and I must ask members to give immediate notice of all other subjects which they wish to bring up, and these will be arranged as convenient and laid before you. I think also that it will be better to postpone the election of officers and delegates till the last, as it may be better that those nominated should know the policy they are called on to carry out. It might easily happen that your policy laid down at this meeting was so distasteful to one nominee that he regretted accepting office, and would carry out his duties in opposition to his own wishes, which would not fail to be very irksome. I propose to take a vote on this point as it constitutes a rather important change in our procedure. I hope with two days before us to be able to allow a little freedom of debate and shall not unnecessarily enforce our strict rules while I am in the chair, but I hope that you will try to make my task a lighter one than it has been on some occasions by refraining from private conversation in this room or even from desultory conversation among yourselves concerning the matter in hand. I propose to allow a few minutes for such conversation after the opening speeches on each subject and then to enforce the rules until, or unless it becomes evident or a formal resolution is proposed, that we should go into committee, when some freedom but not absolute licence is permissible. I now beg to propose that the Honorary Secretary's Report, of which you have all had a copy, be taken as read and adopted, and that the Honorary Secretary receive a hearty vote of thanks for his labours during the past year; every year the work becomes more and more important in nature, and in mere quantity there is a great increase, and I can assure you that I know that the past year has been no exception to this rule, and a vote of thanks has never been better deserved."

ANNUAL REPORT, 1896-97.

GENTLEMEN,—We have just passed through the worst season as regards crops that has probably ever been experienced. In most places blossom showers fell too late, but the year has altogether been a phenomenal one, and the S. W. Monsoon, the heaviest on record, caused leaf rot to set in severely, whereby much crop was lost. The promise for the coming year was, generally speaking, good, but a virulent attack of leaf-disease during January and February has marred it considerably. However those estates which have already been favoured with good showers should do well.

Famine.—In this province I rejoice to say that grain crops have on the whole been better than could at one time have been reasonably hoped for, an exceptionally heavy fall of rain in late November having saved a considerable portion of the dry crops. Throughout the greater part of the Empire, however, the outlook is very gloomy, and it behoves us to contribute our mite towards alleviating the terrible distress. The U. P. A. S. I. has issued an appeal which I hope will be responded to as liberally as circumstances will permit.

The Plague.—If this terrible pestilence should make its way into this province and into Mangalore and its neighbourhood, our labour supply will be very seriously affected. I trust the authorities in the latter place, bearing in mind the large quantities of coolies that come up to Mysore from S. Canara, will take such measures as are possible to prevent the spread of the disease. The Durbar no doubt will introduce into the province "The Regulations under the Epidemic Diseases Act of 1897 for District Municipalities and Towns and Villages" and will meanwhile make all preparations necessary for carrying them out.

Committee of Enquiry.—The sitting of this Committee has been the most important event of the year, and on the tenour of its report depends to a great extent the welfare of the planting industry. It would seem that our safety lies in the introduction of a new Labour Law, for the

Government of India have recently questioned the legality of the present procedure of issuing warrants, and appear to maintain that warrants under Act XIII cannot be executed outside the jurisdiction of the court which issues them. This would to a great extent stultify the Act and leave us more than ever at the mercy of defaulting maistries and coolies. The U. P. A. are watching our interests in this matter.

Labour.—The supply has been more plentiful than for some years past, and I agree with the gentlemen who wrote from North Mysore that an opportunity is occurring to check the upward tendency of advances. Ghaut especially have come up in increasing numbers, but Tamil labour having proved generally unsatisfactory and untrustworthy, has been less employed. Mr. Wilkins' Tamil Agency has proved a complete failure, and I fear that those who advanced him money will lose it.

U. P. A. S. I.—The book of proceedings recently published testifies to the strong vitality of the Association, and to the energy of the new Secretary. I regret that owing to an oversight our statistics were not included in the book. The question of individual membership will be again discussed at the next General Meeting, and your delegates should go prepared with definite instructions. Briefly stated the arguments in favour are—(1) That sufficient funds would be raised to build up a Reserve, as well as for ordinary expenditure, and (2) That a wider interest in the Association would be created; those against are—(1) That the balance of voting power would be upset, and (2) That by increasing the number of members proceedings would be greatly prolonged. I request that you will give this matter your earnest attention.

The Dusserah.—The President represented us, and in a report which has been circulated, has told us of the matters which received his attention.

Police.—Government, in compliance with our request, have been pleased to increase the strength of the force in the Mulnaad, and to slightly raise the wage of the men; the pay of the Duffadars is however still insufficient to induce competent men to enlist, and I trust Government will in the coming year effect an improvement in this direction. Coffee stealing cases have been less numerous, due no doubt in some measure to increased vigilance on the part of the police, but partly also to the scantiness of crops. Only one reward has so far been given. I have had some correspondence with Government regarding the transit of coffee with a view to inducing them to issue pass forms. A difficulty appears to be that in Section 10 of Act VIII. of 1878 the fact that the owner might cart his own coffee was not contemplated, but I think this might be got over by the issue of a different form.

Roads and Communications.—*Gonibide-Belur Road.*—I congratulate the Executive Engineer on the excellent work he has done from the 11th to the 16th mile stone, but in doing so I would draw his attention to the enormous traffic and to the necessity of keeping the road in constant repair, in order to enable it to bear the strain. Already in some places it is worn into holes. The remainder of the road from Tholul to Belur is mostly in bad order and urgently requires attention.

Saklaspur-Chickanhully Road, hitherto known as the Ossur-Gonibide Road, is being cut, but the Engineer's work is apparently hindered by Government not having acquired the land at the points where the track passes through private property. I most respectfully request them to be good enough to settle this matter as promptly as possible; so that the work may be completed this season. When this road is finished it will be our duty to draw the attention of Government to the desirability of cutting one from Chickanhully to Chickmagalur, which is a natural sequence to the Saklaspur-Chickanhully Road, and would put Chickmagalur and Saklaspur in direct communication, an important consideration in view of the Railway coming to the latter place.

Saklaspur-Mudigiri Road.—I referred last year to the crossing at Anjur which is in no way improved, and is a great impediment to traffic of all descriptions. Now that Government has sanctioned the building of the Tadasa and Hole-Nursapur bridges, I would strongly urge the construction of one over the Hemavati at Anjur. The depth of the river in flood would render the erection of any other work than a bridge unsatisfactory.

Chickanhully Shante.—I have to thank Government for so promptly sanctioning the establishment of this new shante, which will be held on Sundays at a point on the Saklaspur-Chickanhully Road central for many estates belonging to both Europeans and natives.

A Mail Tonga will run between Kadur and Mudigiri from the 1st April and should prove a very serviceable institution. It is proposed to extend it later on to Mangalore. It is important that the times of arrival and departure should be so regulated as to suit the gentlemen who use the Mudigiri P. O., and I would specially draw the attention of the authorities to this matter. The Postal authorities have refused to sanction a Telegraph Office at Belur unless an income of Rs. 50 per mensem is guaranteed, and though that amount may reasonably be expected, I fear no one will guarantee it. The Gonibede P. O., now located at Chickanhully, has been recommended as a branch office with a postmaster at Rs. 15 per mensem and sanction may shortly be expected.

Railways.—It is gratifying to observe the forward policy of the Dewar

with regard to Railways. He is fully aware of the immense advantages accruing from opening up the country, and is encouraged in his views by the increasing returns on the lines already existing in the province. In spite, therefore, of the gloomy prognostications that the proposed Mangalore-Arsikiri line would not pay more than 1¹⁰/₁₀₀, I think we may look forward to its being constructed in the near future. From statistics collected it may appear that traffic returns would not be such as to induce Government to sanction the line, but a railway cut through a rich agricultural country, which would put that tract for the first time in direct communication with a seaport, would not leave trade where it found it, an immense stimulus would be given and a large expansion take place. Meanwhile the branch line from Shimoga to Birur is being made, and the Durbar have expressed a wish to construct a line between Arsikiri and Hassan at their own expense, and have submitted proposals to the Government of India regarding it. I regret to hear that the S. M. Ry. has closed its out agency at Chickmagalur, but I believe it will be re-opened shortly.

Cardamoms.—Crops this season were very short and high prices have ruled. The Revenue Supt. has not as yet issued his report regarding the re-assessment, though it is now more than a year since he was deputed to make the enquiry.

Sanderson Memorial Ward.—The building is in course of construction but will scarcely be finished before the monsoon. I think it advisable to state here that the planters subscribed their portion of the money on the distinct understanding that the ward should be for the exclusive use of Europeans, that preference should be given to planters, and I have, in writing to the Deputy Commissioner, informed him again of this. I take this opportunity of thanking Government on behalf of subscribers for the liberal manner in which they have provided the balance of funds required.

Local Officials.—Government are to be congratulated on obtaining the services of such a high class official as Mr. Weir as Deputy Commissioner of Kadur. Mr. Bowring's appointment as Assistant Commissioner of Saklaspur, and Mr. Davy and Mr. Rice's as Sub-Divisional D.P.W. Officers are noted with satisfaction. It is a matter for sincere congratulation that the attitude of natives towards Europeans referred to in my last Report has greatly improved, and our thanks are due to the Dewan whose visit last year had a salutary effect; the policy of increasing the number of European officials in the district will no doubt tend to preserve good relations. The post of Deputy Commissioner of Hassan has been temporarily filled by the appointment of Mr. Krishnaiengar; he will have a difficult task before him to follow in the footsteps of his esteemed predecessor, who by his exceptional qualities was eminently suited to be the head officer of a district in which Europeans have so large a stake. Government may, I fear, experience great difficulty in finding an official from among their own ranks who will adequately fill the post, and I earnestly hope they will either form the whole coffee area into one district under a European Deputy Commissioner with two European Assistants, or else appoint a European to Hassan.

Funds.—At the Extraordinary General Meeting last October, the following resolutions were passed:—(1) that in order to meet the call for funds by the U.P.A. this year, a donation list be immediately circulated, and the amount collected remitted to the Honorary Secretary; (2) that from 1st April 1897 Rule 11 be altered as follows:—(a) Each member shall pay an annual subscription of Rs. 10. (b) Every member who is a proprietor shall pay a crop assessment on the yield of the past season as follows:—

Rs. 3 per ton on 4 cwt. per acre or over.
 " 2 " " " 3 " " " but under 4.
 " 1 " " " 2 " " " " 3.
 Nil if less than 2 cwt.

Coffee under 3 years' old not to be taken into account; both the above shall become due on 1st April in each year; (3) that the Committee be deputed each year to decide what contribution over and above the annual subscription shall be made to the U.P.A. It will be observed that according to the above the new rate would come into force on 1st April 1897. It was my intention in proposing it that the alteration should not be made till 1st April 1898, and I suggest that the resolution be changed now to that effect.

Members.—Mr. Edwin Hunt and Mr. Cochar have resigned, but there are four new members, Mr. C. Lake, Captain Foster, Mr. C. Hunt and Mr. W. Egerton, so that now our numbers reach 50.

Accounts.—Those for the year are on the table showing a balance of Rs. 488-4-0 at credit.

In conclusion, I wish to notice with regret the departure of our late Resident, Mr. Mackworth Young, and to make a further protest against such constant changes. Col. Donald Robertson, his successor, has recently been through the district, and the President and myself had the privilege of calling upon him. Placing the resignation of my office in your hands,

I beg to remain, Gentlemen,

Your most obedient servant,

J. A. HARRIS, *Honorary Secretary.*

The Honorary Secretary's Report having been adopted and a vote of thanks to him passed by acclamation, Mr. R. A. Anderson said he thought the President's proposal regarding the election of the execu-

tive an excellent one, and proposed "that the election of office-bearers be left to the end of the meeting on the second day," which was seconded by Mr. Stewart, and carried.

Famine Fund.—Mr. Harris mentioned that since he had solicited subscriptions towards the U. P. A. S. I. Famine Fund, he had noticed that the Mysore Durbar were organising a Fund, but thought that much as they would like to support the former, they could not do both, and had better adhere to the original intention. This was approved of.

Accounts were audited by Messrs. Aird and Daly and found correct.

U. P. A. S. I. Individual Membership.—Mr. J. A. Harris moved the following resolution:—"That this Association is opposed to the admission of individuals as members of the U. P. A., and will depute its delegates at the next General Meeting to vote against their admission," and said: Mr. President and gentlemen,—I admit there is a good deal to be said in favour of the admission of individual members to the U. P. A., but the strongest argument is that it would ensure a certain and a permanent income, for I have not the slightest doubt in my own mind that Mr. Parsons was right when he said "that surely out of the 1,000, more or less, planters in S. India, 150 would join the U. P. A."; and if the subscription were Rs. 25 per head, Rs. 3,750 would be raised, which, together with the subscriptions from Associations, would suffice. This is indeed a forcible argument, for as you are aware Mr. Acworth's donation scheme has scarcely met with the success he hoped for, and the U. P. A. is hampered for funds, which it is absolutely necessary to raise in order to enable it to carry out its great work. Another argument used is "that the admission of individual members would create a wider interest in the U. P. A." This might be so, but it is manifest that there is at present a very keen interest. I should rather be afraid that it might detract from the interest now taken in the District Association. Again it is urged that by the present system delegates attend the conference crammed with their Association's instructions, and do not give vent to their own opinions; in fact that individuality is stifled, but I would point out that though delegates must vote according to instructions, there is nothing to prevent them expressing their own opinions in the course of debate. The only point then that has much force is that an adequate income would be provided. But let us look at the other side of the question, and let us try (1) to deduce such arguments as will prove the scheme unwise, and (2) endeavour to evolve some plan by which funds may be raised. First I maintain that the admission of individuals would upset the balance of voting power. In order to make my arguments clear I will briefly explain the present system of voting. Each Association may acquire the privilege of 1 vote by paying Rs. 75 per annum and may acquire up to 5 votes at the same rate, but no more; there is therefore a certain check put on the possibility of one or more Associations becoming too powerful. Now what would be the result if individuals were admitted? In considering this point I would ask you to bear in mind the enormous area over which the various planting districts are scattered. It is not like Ceylon, where all are comparatively close. What then would be the result, why from those Associations which are near Bangalore many would join, while from those like Travancore few if any, and the latter would find themselves outvoted on every question in which they were in opposition. You will perhaps say why should not members from distant Associations join? Well, I would refer you to the debate at the Conference last year, when some gentlemen representing the distant Associations stated that it was with extreme difficulty that they were able to induce even a single delegate to travel so far. How then can it be expected that individual members would attend? Why not allow proxies? Gentlemen, I would again refer you to the debate last year in Bangalore, in which the delegates of some of the distant Associations pleaded for proxies to be allowed, and when a guarded measure was reluctantly passed because it was felt that even in such a measure there was danger. How much more danger would there be if proxies were generally allowed? Why! the Conferences might deteriorate into paper meetings, at which the Chairman and the Secretary, alone present, would count the votes! I don't say this would happen, but it might, and the U. P. A. would lose power and influence. Mr. Parsons suggested by way of maintaining the balance of voting power that the value of the Association vote should be reduced to Rs. 10; but though this might prevent delegates being outvoted by members of their own Association, it would not alter the relative voting power of the different Associations. Another suggestion which I believe has been made is that the Committee should be formed into a sort of Upper House, and that with

them final decisions should rest. I ask is it likely that individuals would join in this case, when they would be allowed to talk but not to vote? My second objection is that Proceedings would be greatly prolonged. More members would attend the Conference, the Chairman's task of keeping order would be much greater, there would be more desultory talk, more diffusiveness, and probably business would be less satisfactorily conducted. To my mind the present system answers admirably; without any disparagement to District Association Meetings I would say that diffusiveness is, so to speak, boiled down there and the "concentrated essence" served up in Bangalore. It may be said what is the objection to proceedings being lengthened? Some delegates can scarcely spare the time to attend the three days' sittings, and certainly would not be able to come were the meetings to occupy a much longer time. But, gentlemen, there is a third objection and one which appears to me to have been rather lost sight of. If the principle of individual membership were accepted, it would alter the constitution of the U. P. A. I maintain that two qualities of votes cannot exist in one institution. If you admit the individual vote, you must cancel the Association vote. Mr. Parsons' intention appears to be to keep both, but even if I am not right as to this being unconstitutional, I feel perfectly assured that the Association vote will cease. The existence of the two is an anomaly, for instance a delegate would vote for his Association, and might if a member himself vote as an individual. Gentlemen, this is a very grave consideration, the U. P. A. S. I. is an Association of Associations, themselves powerful bodies. It is the representative of the whole of all these bodies, and as such has built up for itself a name and a strength which has commanded the attention of the empire; it has been connected since its foundation in our minds, and in the minds of all who have watched its progress with the several planting districts of S. India, and has caused a feeling of kinship and of friendly rivalry to grow up. I feel convinced if we were once to admit individuals as members of the U. P. A., it would degenerate into an Association of individuals, instead of an Association of Associations, and its power would rapidly decline. The District Association would one by one drop off, and the U. P. A. would no longer be the representative of the whole planting community of S. India, but only of those 150 or so individuals who were members. I think I have brought forward sufficiently strong arguments to prove the undesirability of admitting individuals as members of the U. P. A. Let us now consider if funds cannot be raised in some other way. I have explained the present system of subscription, and I would suggest an extension of it. I would raise the value of the Association vote to Rs. 150, which, presuming the subscribing Associations agreed, would produce an income of between Rs. 6,000 and 7,000. This should suffice for all ordinary expenditure, and leave something over to add to the Reserve. You will ask would the District Associations agree to it? I think so, judging by the keen interest displayed in U. P. A. affairs, and by the willingness with which they agreed to a 50% increase last year. It would of course be open for any Association to reduce their number of votes were they unable to pay the enhanced rates, but I think *esprit de corps* would prevent this being necessary. I maintain as a principle that the U. P. A. must look for its permanent income from the Associations and not from individuals, but in order not to check the generosity of those who wish to contribute largely and in order to help the fund to pile up, I would keep Mr. Acworth's donation list always open, and let such amounts as might be collected be added to the Reserve Fund. Gentlemen, I think I have proved my case. I have shown that there are such strong objections to the admission of individual members to the U. P. A. that it would be unwise and dangerous to adopt such a course! I have shown that geographically it is impossible in S. India, where distance is so great a factor; I have shown that it might lead to the secession of one Association after another, and would be the beginning of the disunion of our union; I have shown that proceedings would be inconveniently prolonged, and I have endeavoured to prove that once admit individuals as members, you would sound the death-knell of the U. P. A. S. I. as an Association of Associations and convert it into an Association of individuals with diminished influence and power. Further I have suggested a way by which sufficient funds may be raised to enable the U. P. A. to fulfil what is expected of it. I urge your support in this matter and ask you to send your delegates to Bangalore charged with instructions to vote against the admission of individual members.

Mr. J. G. Hamilton said he was unaware that Mr. Harris was going to speak on this subject, and had himself prepared a

speech. He agreed with Mr. Harris on all points save one, and that was that the hands of the delegates should not be tied. He then delivered the following speech:—

I think it is certain that Mr. Parsons will push his ideas with his well-known energy at this year's Conference, and we must send our delegates there fully prepared to exercise such discretion as you would use yourselves to vote for or against him, or to suggest amendments as after a consideration of your opinions may seem good; we must not oppose it without any reason if Mr. Parsons proves that he can raise more than I think he can, but at the same time if you thoroughly disapprove of the principle you must give your reasons and not simply send your delegates to vote blindly against it because your delegates last year did not approve. Those of you who take an intelligent interest in affairs have, I presume, perused the Book of Proceedings containing the discussions which take place in committee and which are of course not published in the press, and you will be well acquainted with the arguments brought forward for and against the scheme. Mr. Parsons' Urgency Fund of Rs. 10,000 has been, I daresay, already subscribed under the Resolution of last year, but I hope that if this scheme is to be accepted, this may be considered as an extra and that the scheme in its entirety involving the collection of another fund of Rs. 10,000 will be adopted perhaps it might end in more money being collected if he would alter it to Rs. 5,000 per annum which I understand North Mysore desire. I shall say something about Mr. Hay's scheme before I finish. Mr. Parsons' idea of an Urgency Fund can only be opposed on the ground that the sum named is so small that it may be soon exhausted and there is always a difficulty about raising money amongst coffee planters especially if you keep on running round with the hat for new funds. As for his individual vote scheme, I gather from Mr. Ormerod's letter that Mr. Parsons' prophecy that out of the 1,000 planters 150 could be found to subscribe has been fairly justified, so that we may take it that the hand-to-mouth existence of the U. P. A. is assured; but that is not enough; we have and shall have many channels for the spending of much money in a useful manner, and we must have external sources whence to provide the wherewithal to feed these channels, and it is for you to say whether Mr. Parsons' 10,000 will last for the decent interval which must elapse before we are likely to be able to raise another fund, or whether in your opinion there will be such an increase of individual subscribers as will provide the necessary funds. Personally Mr. Acworth's ideas are more to my liking and Mr. Newport's life membership idea is a combination of the two schemes which should be well considered. Mr. Acworth provides an ever open list, and Honorary Secretaries have only to secure one good donation or a promise such as was made on our original list to pay a small sum yearly for five years and then he will let such subscribers alone and only have to wake up non-subscribers and new-comers. My two objections to Mr. Parsons' scheme are entirely connected with the individual vote principle, and are (1) that with the general want of practical working interest in Association affairs sufficient men will not be found to join to make it worth while to alter the Constitution of the U. P. A., which was started as an Association of Associations and should remain in that form; Associations represent the opinion of the majority of thinking men in the districts and the delegates are supposed to be the best men in each Association; and unless very good cause can be shown, such as a very large permanent revenue, it should not be made possible for a factious and energetic minority to oppose the wishes of their district in general; we can easily take precautions which will prevent their outvoting their delegates, but we cannot prevent the harm and dissension they may cause by their speeches. (2) That to avoid the danger of say Coorg and Mysore from their proximity to Bangalore swamping all the other districts on a disputed point, proxies must be admitted, and once you do that you destroy the value of the yearly exchange of opinions. If also proxies are to be general, too much power may be gained by one man (for I am presuming that a large number of members have joined) who has energy enough to write round and call round and collect proxies. Or if they are to state in which direction the vote is to be given, they are giving a blind and unconvincible vote which confers no benefit of opinion and is not open to the benefit of the opinions of others. These dangers can be partly met by the proxies being made open and only available through the Association delegates, but even then one large and rich Association might collect too much paper authority and get an undesirable amount of power into its own hands, and if the delegates are obstinate men or bound by the wishes of the majority of their Association to vote in a certain manner, these vote

practically unconvincible. We have before now had delegates confess that they personally agreed or disagreed but were bound to vote against their convictions. Now let us consider Mr. Hay's scheme; this I believe is that 5,000 be raised at once as an Urgency Fund to be renewed yearly if necessary, and further that Associations should raise as much as they can in their own way and purchase U. P. A. votes as many as they can at say Rs. 200 each. Now, gentlemen, I like this perhaps a little better than Mr. Parsons' as it keeps everything in the same form as at present, but are you prepared to keep your Association in the first flight? At present we have the same voting power as the big Associations, and the Honorary Secretary knows with what difficulty the funds are provided. Year after year you decline to raise your subscriptions to a good round sum, so year after year you have to listen to proposals for a fresh increase. Now a fair proposal may be put before you, if you will not accept the best—which is Mr. Acworth's—and it is for you to say whether you will give us enough money to pay at least double the present subscription to the U. P. A. and at the same time pay about Rs. 500 per annum towards an Urgency Fund. To do this you must accept at least a Rs. 5 per ton assessment without any sliding scale; a very large number are, I know, quite willing to do so, but a sufficient number hang back to deter me from making such a proposition myself, though I hope to hear it discussed at this meeting when we come to the heading of accounts. Gentlemen, I do not ask you to tie your delegates' hands with instructions; you always act in a liberal manner. That respect, pray continue to do so; but please give them your opinions and wishes and leave the matter in their hands.

Mr. Stewart having expressed himself in agreement with Mr. Harris, Mr. F. M. Hamilton said he thought it would not be wise to tie the hands of the delegates, and suggested that in the event of the large majority of the District Associations being in favour of individual membership, the delegate in voting should be allowed to use some discretion. After some further discussion, in which Mr. Harris stated that he was only asking for instructions to be given delegates regarding a matter of principle, viz., as to whether U. P. A. should or should not admit individuals as members, and not that their hands should be in any way tied with respect to details of any scheme that the U. P. A. might adopt, Mr. Harris' resolution was carried by a large majority. Mr. Stewart then proposed and Mr. Daly seconded "that the principle of Mr. Harris' scheme for raising funds for the U. P. A. be accepted and that the delegates be allowed discretion to vote for the raising of the value of the Association vote in connection with this, or any similar scheme, to Rs. 200." *Carried.*

Funds.—Mr. Stewart said, with reference to the proposals of Mr. Harris, which were accepted at the extraordinary general meeting in October last, viz., that a crop assessment should be levied as follows:

Rs. 3 per ton on 4 cwt. per acre or over.

" 2 " " 3 " " " "

" 1 " " 2 " " " "

Nil if less than 2 cwt.

that in the first place he considered this would fall unfairly on the estate that was highly cultivated and cropped well, and in the second place that not sufficient funds would be raised. He proposed a fixed tonnage assessment which Mr. Playfair supported. Mr. Eicke opposed a fixed tonnage assessment, though he personally agreed with it, on the grounds that many would object to it, and perhaps refuse to pay it, and that it was advisable to aim at a scheme which, being least objectionable, would be likely to be accepted.

Mr. F. M. Hamilton agreed with the principle of Mr. Harris' scheme, but was convinced that sufficient funds would not be raised hereby, and proposed the scale should be raised as follows:

Rs. 4 per ton on 4 cwt. per acre or over.

" 3 " " 3 " " " "

" 2 " " less than 3 cwt.

which was seconded by Mr. Eicke.

Mr. Harris supported his original scheme and proposed a resolution in favour of it, which was carried by 13 to 9.

The Honorary Secretary's proposal "that the new rules shall not come into force till 1st April 1898" was agreed to.

A proposal "that cardamoms shall be assessed at the rate of four annas per maund" was accepted.

Meteorology.—Mr. Elder said:—"The Mysore Government, as you are aware, have established one first class and three second class stations all in the open country, and as far as I know there is not one along the whole range of the Western Ghats even in British territory.

Situated as we are on the very edge of the Mysore plateau, a station say in Mudigiri would be admirably suited for observing wind currents, changes of barometer pressure, &c., and besides being of great value from a scientific standpoint, it would be of much interest to the planting community as we could get early notice of approaching storms, both telegraphically and from observations on the spot. I therefore beg to move the following resolution: "That the Government of Mysore be requested to establish a meteorological station with continuous observing instruments at Mudigiri, at which atmospheric conditions may be carefully recorded, and which shall form an intermediate station between the west coast and the maidan country of Mysore." This was seconded by Mr. J. G. H. Crawford, and carried.

Act XIII. of 1859.—The Honorary Secretary drew attention to his remarks in the report and emphasised the gravity of the situation. He felt sure this Association had approved of every word the Honorable Mr. Hodgson had written on this subject, and of the action the U. P. A. were taking. He next drew attention to certain rulings of the High Courts of British India, and it was resolved that he should inquire if these were accepted by the High Court of Mysore. Some discussion took place regarding the drafting of a Labour Form of Agreement, and Mr. F. M. Hamilton proposed and Mr. Elder seconded, "That as soon as the Report of the Labour Committee is issued, the U. P. A. shall be requested to get forms of agreement between planters and maistries, planters and coolies, maistries and coolies, drawn up in proper legal manner."

Labour.—Mr. J. G. Hamilton drew attention to the Honorary Secretary's remarks in the report and said that an effort should be made to reduce advances. If old maistries could not be cut down, new ones might at any rate be advanced at a lower rate. There had been more or less of a panic in some quarters regarding the insufficiency of coolies, and in consequence reckless throwing out of money, which he strongly deprecated. After some discussion the sense of the meeting was taken and an opinion recorded that each individual should do all he could to reduce advances.

Police and Coffee Stealing.—Mr. J. G. Hamilton said:—

COFFEE STEALING.

While the year is hardly far enough advanced for the collection of that information which generally reaches us too late, and while the great receiving depôt at Devarunda is hardly yet open, I feel little doubt that as the organisation for the disposal of stolen coffee improves, and no material improvement is made in the number of personnel, or activity of the police, coffee stealing in one form or another will every year increase, the quantity stolen will go down in such a bad year as we have just gone through as looting is made unremunerative, but the thieves improve their systems and appetite is perhaps increased by partial abstinence; it is therefore to our best interests to set to work and suggest some improvements in the carrying out of the law which being defective does not entirely protect the coffee thief at every point! We must not at present touch on any amendment of the law as the subject is under consideration by the Government of India. There are, and perhaps always will be, in this country great difficulties in the way of those who wish, while effectively protecting the honest to expose the dishonest, and every check we impose on ourselves puts a weapon into the hands of a dishonest policeman for oppressing small pariah holders. With all this the evil is such a serious one that the situation must be faced boldly, and I claim your assistance now in suggesting for consideration by our community and the Government of Mysore, and later for submission to the U. P. A. such measures as will in your opinion enable us to carry on our vocation without an undue amount of loss which should be humanly preventible. We suffer enough from drawbacks for which there is no remedy. I feel sure that if all districts can agree to certain precautions, much good will be effected by similarity in the working of our systems. Some of our ideas may not suit all districts and some other ideas may not on the whole suit us, but full consideration is generally given by delegates at the Conference to all objections and in the long run their decisions will be found fair to all. There are so many stages at which stealing can be carried on that the subject is a most complicated one, and one which cannot be thoroughly disposed of at one sitting of our Association, though I am certain that at various times some practical measures will have suggested themselves to almost every one of you. In the first place naturally looting from the trees will strike everyone as the first stage at which stealing can take place, but against this I do not intend to suggest any special remedies as it is a crime the commission of which managers may be reasonably

expected to detect, and I regard the difficulty of detecting the fact that a crime has been committed as our most serious one, and improvements in the police and the general working of the law would lead in many cases to the detection of the criminals. Next perhaps will come the thefts by our own curing coolies and watchmen. We may, I am afraid, take it for granted that no uneducated native is honest except from policy and then generally only temporarily, and therefore, unless it is made very probable that thefts will be detected and punished, those left in practically undisturbed charge of a valuable commodity all night are certain to appropriate more or less according to their ideas of honesty or respect for the law. In this matter a systematic exchange of outturns and great regularity in measuring with a careful examination of the outturns from each field would in time lead to more check than there is now, but this can never be complete, as we all know that outturns vary from year to year, and detection is therefore very difficult. While on this subject I would advise every planter to abandon the present loose system of bushel measurement and adopt that of weighing the fruit at all events. I will not advise the weighing of parchment, as that being measured by struck bushels is fairly regular, and until a standard be established which cannot be done without considerable expense of time, money and trouble, we should only be making things worse. Many planters now weigh and would be most happy to teach their neighbours all they know. Perhaps other districts can give us some hints in this matter. At present we go on repeating that 100 bushels of fruit give 50 of parchment, but how many men take the same bushel from their coolies and how many get 50% outturns. Police watchers and imported watchers have been tried, but their success has been worse than doubtful. Policemen have been caught stealing and so I believe have the imported watchers. Covering up the vats is an experiment I am going to try, which if it does not damage the coffee may prevent stealing the fruit and wet parchment, but will not affect the parchment cherry and tails (which last are more stolen than anything owing to irregularity of outturns) lying on the drying grounds. Nothing can stop this but an efficient and vigilant police, with a detective force separate from the executive establishment. This last prevention may be taken to cover the most common, (in this district) most annoying and probably in the end most serious form of stealing, the petty pilfering of our own coolies, pickers and others. Nearly every toddy-shop and petty angadi in the country is a depôt for stolen coffee. Some good was done in Belur last year by the infliction of small fines on a number of these who were detected by the special Jemadar, but in the Mulnaad detection is still at a very low level. Nearly every native planter on the lower scale is willing to increase his crop by cheap purchase if he does not (and it is a small minority who do) condescend to steal for himself. I regret to say that a certain number of those who cannot be considered as altogether on the lowest scale have at times fallen under suspicion of dealing with some of the larger receivers; all these men are directly or indirectly maintained by our petty pilferers. I believe that the curing coolies when in a larger scale of business have other channels. Lastly comes the stealing by cartmen (for I put bungalow servants of whom the lower classes are often the worst thieves and are often used as intermediaries among the last named gang). This I believe to be easily detectable with careful packing on the estate, and a thorough investigation by the curer, the only difficulty being when the amount stolen is in value in excess of the cart hire remaining to be paid. We in S. Mysore are particularly fortunate in that we can get the Hassan Gowda to go down to the coast; he is one of those whom I reckon indifferent honest from policy. He is a man with an immense idea of himself, generally very wealthy for his station, and has a solid dislike to anything in the shape of Criminal Law, though he probably enjoys a civil suit as well as any man; these men will not steal if it is made difficult and risky. I believe that the simple precautions I adopt while capable of improvement have kept my coffee comparatively free from theft for some years. This may be considered as happy ignorance, but I admit that my curing and other coolies steal my coffee and ask that my belief that the cartmen do not may be accepted. I use the same bushel as my agents and cut every bushel fine, pack 3 bushels exactly in every bag, seal 10% on every knot and enclose these sealed bags mouth downwards in other bags which are again sealed on every knot. I send my coffee down very dry and expect to lose 1%. I do lose about this and generally find

that if there is a difference it is in favour of the unsealed bags. No if my agents on the coast minutely examine every test bag as I suppose they do, they cannot fail to find marks if a gauge or scoop has been inserted, fibres of the outer bag can be worked together again but not those of the inner bag, the addition of a linen bag inside would in my opinion make this test perfect. There can be no doubt that it is the clear duty of every agent to fine the cartmen in case the bag differs from the test bags and the duty of every planter to uphold him. I have forgotten to state above that test bags ought to be weighed and a few of the other bags (secretly marked) also. I have not always done this, but it might often assist the curer to a right decision. Now to try and suggest measures for breaking up the present almost perfect organization for disposing of stolen coffee, and let me begin by acknowledging the difficulty of the task we expect from the police as well as the almost entire failure in most parts of the Mulnaad. A portion of the law being under consideration by the Government of India, I must refrain entirely from any criticism of the law itself and pass on to mere matters of local procedure under Sec. 10, where I think much improvement is possible. This section forbids the removal of coffee by any person, without the permission of the owner in writing. It commences "no person shall, &c., &c." and a very great deal depends on the interpretation of the word "No person"; if they be held to include owners themselves well as good, if not a very large loophole for escape is left. In the first place I would suggest that to assist the working of this section and the Act generally, we take the excellent system adopted in Wynaad as a base; we may be able to suggest alterations or additions calculated to meet local conditions, but with the evidence of the U. P. A. before us that Mr. Fawcett's system, coupled of course with his personal experience has checked stealing in Wynaad, we may assume that the system mentioned in his evidence before the Committee is a sound starting point. I beg to suggest as my contributions for discussion—(1) That the crops of all gardens be estimated and the estimates filed in the police thana to which the garden is nearest; that such estimates be made in June and checked in October. (2) That Sec. 10 shall be strictly enforced on all persons without distinction and that the permits or passes in question must be on forms procurable only at the police station in which the estimate was lodged, or in the case of purchased coffee that under the jurisdiction of which the business is carried on, and shall be in quadruplicate, one copy to be kept by the producer or purchaser and shown when required under Sec. 5, one copy to be filed in the issuing police station, one shall accompany the coffee and be visé by every policeman and every thana passed, and in the case of coffee going out of Mysore delivered up at the frontier station or otherwise at the last station passed, and the last shall be delivered to the consignee after in case of coffee passing through British Territory being visé by every British policeman and thana passed. In the case of more than one person, animal or vehicle being employed in carrying the coffee, full details shall be written on the back of the pass as to the quantity carried by each person, animal or vehicle. Every pass shall be signed by the head officer of the issuing thana. To these precautions I expect strong opposition, and I endeavour to disarm some of it beforehand. In the first place I appeal to those who will object to it on the score of the trouble involved, would ask them to give the matter very careful consideration and refrain from throwing obstacles in the road of those who suffer from the evil and are seeking a remedy. There may be some fortunate or skilful who do not suffer, and it is those from whom I ask a little tolerance for the ill-luck or weakness of their neighbours. As for those who suffer, I believe that hardly any cost will be too great if a paralytic evil can be put a stop to even in a small degree. I believe, too, while the idea seems to involve a great deal of inspection and trouble I shall find that the machinery will get into smooth working order in one season, and thenceforward be no more irksome than payment of tolls or any similar duty of daily life. The strongest opposition I expect is from Government, and coffee stealing sources which for once in a way unite to point out the inexpediency of throwing weapons of extortion into the hands of the police. This to a casual observer seems to be a most weighty argument and I ask you to let me try to meet it. Let us consider the effect on the small planter who *bonâ fide* takes his own crop on his head or in his own cart and there disposes of it for cash or barter it for other goods; it will be held a hardship that he should be forced to put himself

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ay under police supervision and put to a lot of trouble, &c. I must nit that at first sight this is a moving tale, but on full examination ppears to me that the hardship is somewhat exaggerated. It is no dship to force a man to go to a ticket office to purchase a ticket for journey, or to force a man to travel miles to a taluq cutcherry or er large place to purchase a stamp paper to write out an agree- nt, plaint or bond which he may never have to take to a cutcherry. w granted that time is of little value in this country, and we all ow that a man, even one fairly well off will sacrifice a day's pay s. or more) to go to a second sante in the week if he finds, let us for an example rice only 3 seers for the pauli (4 as.) and he hears t he can get 3½ at the other. We have often met with this sort of gin in actual life and probably been annoyed by it in the case of lies. Granted then that a high value cannot be set on a walk to nearest thana, generally about 2 miles, I think you will agree h me that the apparent hardship is not such a big matter after

As for throwing a weapon of oppression in the way of the police, ke it that the price of these passes will be about 3 pies each, and must expect that the police will charge another 3 pies. I do not nk it will be more, for I know that they only take 4 annas on a nna gun licence. Is 3 pies or so such a very serious matter? Men n't pay more; I have had a man deposit his gun in my bungalow d tell the duffadar to come to me when he demanded an 8 anna be in place of the usual 4 annas. It must be remembered that ngs are no longer as they were. We have taught the people ny things to our cost; there is not a holier in the Mulnaad who es not know his own value and put a couple of hundred per cent. op of it when it suits him. The real old oppression is pretty well ne away with; a man is only blackmailed when there is a fair case ainst him: and if he is not to be brought to justice, the next best ing is that he should be looted. As a matter of fact these passes ce granted will form an actual protection against blackmail of one rt, for they will be of a certain official muster and easily recogniz- le; while at present the policeman meeting a petty owner carrying coffee without a pass can always get a few pies out of him to avoid ouble, and any peon not known to be literate may assert if a pass roduced that he does not believe it is a pass and the bearer must ne along to the thana or hand over a "fine"!! (3) I would sug- st that we ask for a further increase of the Police force at all events ring certain months. As far as the Mudigere taluq is concerned, obably 15 men more put on to the regular staff should be sufficient. hink they would be fully employed all the year round, but another should be added as a special detective force, who should never ear in the taluq or near it in uniform; any who might be consid- ed superfluous in the hot weather and monsoon could be drafted to her work or kept in a reserve; but from 1st October to 30th April ey should be kept in and about this taluq. I cannot suggest numbers r other taluqs, but of course I suggest the same system. We may be ld that we should employ our own detectives, but this is nearly ossible; there are few coolies who would be true to their salt nder the circumstances. Government may meet with a certain ount of success as a grudge is seldom borne against a man who tects crime in the *bonâ fide* discharge of his bare duty, but none of r people would take the work meaning to carry it out honestly, for ould of necessity lead them into quarrels and feuds with their tected neighbours which no man will enter into willingly on behalf another, in a country which has the reputation this Mulnaad has r devil-putting and poisoning, both very serious matters to the ordi- ary native. Kindly remember, gentlemen, that I have been able to avel very little in the district, and therefore my remarks can only e held to cover estates immediately under my notice; I hope you ill give your careful attention to all I have said and criticise or sup- port me as your local experiences may dictate, in order that the onorary Secretary may feel fully qualified to deal with the matter any time, and while apologising for detaining you so long, I earn- tly beg you to give him the benefit of your opinions.

Several members including Messrs. Anderson, W. L. Crawford, icke, F. M. Hamilton and Stewart spoke on this subject. Finally r. Harris remarked that he agreed with Mr. Hamilton's proposals egarding coffee passes, but was strongly opposed to all crops being bject to being estimated by outsiders. This was inquisitorial, and ight if an unnecessarily low estimate were made compromise the wner's position with his agents. He also deprecated asking Govern- ment for a further addition to the Police force at present, as a con- siderable increase had just been made to the Mulnaad body. He roposed, and Mr. Eicke seconded, the following resolution:—"That is meeting begs to thank the President for his exhaustive paper

on the subject of coffee stealing; but while agreeing with him as regards his proposal relating to passes, it prefers not to commit itself to a scheme involving a general estimating of crops without further enquiry, and deposes the Committee to draw up an elaborated scheme on the lines the President has suggested." *Carried.* Mr. T. Hunt drew attention to the objectionable custom on the part of the police of asking for presents, and Messrs. R. A. Anderson, J. G. H. Crawford, and F. M. Hamilton supported him in this statement.

Forest Laws.—Mr. T. Hunt said that as the local Government had informed him that they intended to carry out the Forest Rules regarding the clearing of jungle within 50 yards of stream, he begged to propose that the matter be taken up by the Association, and that a strong protest be made against the enforcement of these regulations. Mr. Horne seconded the proposition, which after the Honorary Secretary had mentioned that he had by no means lost sight of the matter, was carried.

Roads and Communications.—Mr. Daly drew the Honorary Secretary's attention to the bad state of the Gonibide-Belur Road between the 6th and 8th milestones. Mr. Playfair endorsed the Honorary Secretary's remarks regarding the Anjur bridge, and requested him to move Government to sanction its construction. Mr. Sladden, while approving of the Honorary Secretary's remarks regarding the Saklaspur-Chickanhully Road, expressed a hope that early attention would be paid to the completion of the bridges.

Railways.—Mr. Playfair said that though he considered the fact of the Durbar having applied for sanction of a line from Arsikiri to Hassan as satisfactory, he regretted that they had not proposed extension as far as Saklaspur. He moved (1) that this Association highly appreciates the wise policy of the Durbar regarding Railways, and respectfully solicits them to seek sanction as early as possible for the extension of the line from Arsikiri to Saklaspur, and further to use their utmost endeavours to obtain sanction for the construction of the line thence to Mangalore. (2) That this Association begs to tender its best thanks to Mr. Graham Anderson, C.I.E., for the amount of information regarding the proposed Arsikiri-Mangalore Railway he has collected and placed at the disposal of the Association. Both resolutions were carried unanimously.

Cardamoms.—Mr. W. L. Crawford said "that for the last ten years our Association has been doing its best to get Government to reduce the cardamom assessment to a uniform rate of 8 annas per acre on ghaut lands owing to the large proportion of rock and uncultivable land that is mixed up in the blocks. Many reminders have been sent to Government without any apparent result. Several promises have been made of an early and favourable settlement since the visit of the late Maharajah, but so far little or nothing appears to have been done. I therefore move that another representation be made by the Honorary Secretary to the Durbar urging an early settlement of this long-standing grievance. Seconded by Mr. Playfair, and carried.

Rules.—Mr. Elder proposed and Mr. Limouzin seconded, "that officials residing in the coffee district may by acclamation be elected honorary members of this Association." *Carried.*

Local Officials.—Mr. Elder said, "an excellent example has been set us by the Nilgiri and Wynaad Associations who have invited certain of the District officials to become honorary members. I therefore beg to propose that the Honorary Secretary be asked to inquire if Messrs. Weir, Bowring, Rice and Davy will join our Association as honorary members." Mr. R. A. Anderson seconded the proposition, which was carried unanimously.

Mr. Horne thought we were to be congratulated on Mr. Bowring's appointment to Saklaspur, but he was only Assistant Commissioner. In so large and important a district as Hassan, with so many European residents, he would like to see a European at the head, and he begged to move "that this Association fully endorses the opinions expressed by the Honorary Secretary in his report under the heading 'Local Officials,' and requests him to bring them to the notice of Government at an early date." Mr. Crawford seconded the proposition, which was carried.

Circulation of Papers.—The Honorary Secretary drew attention to the inconvenience that was caused him by the papers being so long on circuit, which rendered it difficult for him to carry on correspond- ence. He proposed, however, continuing the meetings of the sec- tions, but would ask each Committee man to return the papers to him after his meeting had been held, and he would forward them on to the next section,

Burning of the Palace at Mysore.—Mr. R. A. Anderson said he felt sure that all present were anxious to show their sympathy with the Maharanee, and he moved "that this Association has heard with the greatest regret of the disaster that has befallen the Royal family of Mysore, and begs to tender an expression of deep sympathy with the Maharanee and other members of the Royal family." Carried unanimously.

The President in his closing speech began by commenting with some severity on a certain amount of persistent disorder which had prevailed amongst a small section of the large meeting on the first day. He also reproached those subscribers to the U. P. A. Fund who had not paid up their donation, and said he thought they were acting in an inconsiderate manner towards the Honorary Secretary. He then went on as follows:—You have received an appeal for help for the suffering; and hardly as the people of S. India may have treated you, all resentment must be laid aside and you should send your mite to save the lives of people whose failings and prejudices are so great that in many cases it is with difficulty that they can be induced to accept help. The planter from of old has had the reputation of being an open-hearted and open-handed friend of all in distress; do not now allow that reputation to be imperilled by selfish considerations. This has no doubt been a year in which our losses have been very serious, but we are not yet hopelessly bankrupt, and I trust all will spare at any rate a trifle. I am not asking for large sums; let those who can afford them give them, but to one and all I say "Give now." Give Rs. 10 to-day if you have it with you, it will be better than a promise of Rs. 15 later on. Give Rs. 5 a month if you can, or Rs. 2 or 3 if you cannot, but anyhow open your heart and purse to give. Gentlemen, you have passed a Resolution of which all must approve most truly, sympathizing with the Royal family of Mysore in the loss they have sustained by what at present we have reason to fear is the total destruction of their historic home. We planters of Mysore put the Maharanee of Mysore second only to our Queen in our affections, and the most thoughtless cannot fail to feel the sorrow which Her Highness will experience at such a calamity, for the intrinsic loss we need feel no regret, but it is quite impossible to reconstruct a home with all its associations. I am very glad that you have given public expression to your sympathy. The Secretary to the U. P. A. has circulated for approval the following address to H. M. the Queen-Empress to express our congratulations, if I may use such a familiar term, on the completion of a reign which is in every good sense a record. (Draft address was here read and received with applause.) I think the address expresses everything that I need say, and I will only therefore express my entire approval of the idea and of the action of the Honorary Secretary who has approved of it and suggested Rs. 500 as the approximate amount he thinks should be spent on a suitable casket. Gentlemen, I have now the honor to resign my office and beg that you will proceed to elect the officers and delegates for the coming year.

Election of Office-Bearers.—A vote of thanks to the retiring executive was carried *nem. con.* and Mr. J. G. Hamilton was elected President, Mr. J. A. Harris Honorary Secretary, and Mr. J. G. H. Crawford Vice-President and Committee man for Section No. 1; Mr. Horne Committee man for Section No. 2; and Mr. W. H. Scott Committee man for Section No. 5. The proceedings then terminated.

SHORT STORY.

PLANTING SONGS.

SOMEONE has asked us to start a "Poet's Corner," and by way of beginning sends us a well-known Ceylon planting song, which we give below. It is decidedly applicable to a few of our South Indian districts. We shall be glad to get similar contributions from our readers:—

HERE'S TO TEA.

(Air: "JOHN BROWN'S BODY.")

I.

In the good old days there were no V. A.'s,
No kanaks to bother your soul,
But you picked your crop and worked the shop
With never a big check roll.
From early morn to dewy eve,
If you'd got crop in the store,
No peace you knew till your crop was through
And you were free once more.

Chorus.

Singing, glory, glory, Hallelujah,
Here's to the firm that doesn't screw yer,
Never sends a V. A. to yer,
As we go planting along.

II.

We fought the bug, both black and green,
With lots of good manure,
But jungle rats, we've got no cats,
And borer we could not cure.
But we made it pay in a quiet way
To the tune of five thous. a year,
Till a fungus came with a horrid long name,
A thing to dread and fear.—Chorus.

III.

Oh, next Cinchona was the rage,
'Twould save us all, they said,
'Twould mend our broken fortunes,
And make us rich instead.
Men talked of Calysayas,
And Officialis too,
Till a canker came and killed the trees
And nearly killed us too.—Chorus.

IV.

Oh, crotons, cotton and rubber
We've tried, but they do not pay,
And cardamoms and cocoa are
But good in a quiet way.
So there's only one thing left to us,
To keep us from the wall,
So here's to Tea, good old Bohea,
And here's to the flush so tall!—Chorus.

V.

Then it's: "How are you off for labour,
And how does the flush come in,
And are you short of withering space,
And rolling still like sin?
Or do you roll it lightly,
Ferment it not at all,
Fire at a hundred and ninety
With a view to prices tall."—Chorus.

VI.

In the good old days
King Coffee ruled the roast,
We've rung the changes all around,
And tea is now the toast.
Oh may you get rattling prices,
And may they never fall,
So here's to Tea, good old Bohea,
And here's to the flush so tall.—Chorus.

HE DID NOT GO TO AUSTRALIA.

NOTHING is easier than to recommend a man to go to Australia. A dozen words or so out of your mouth and you have done it. But for him to act on your advice—that is a gray horse of another color.

our. You see, Australia is half-way round the world; and to pull stakes here and go there—family, interests, and all—is a job no man takes in hand save for the strongest sort of reasons.

Yet that is what Mr. Emrys Morgan Price, grocer and tea merchant, of Trehafod Road, Hafod, S. Wales, was advised to do by a doctor at Merthyr. Now, we don't say but that the result, if Mr. Price had gone, would have proved the doctor's judgment to be sound; but as it happened Mr. Price came out all right in the end. The facts are briefly these: In August, 1881, the customary agricultural competition took place at Abergavenny, and Mr. Price attended. In some way—he fails to state how, and it doesn't matter—he took cold and had a chill. When he arrived home at Dowlais he could scarcely breathe. To draw his lungs full of air was quite impossible. In fact, he felt as if he were suffocating. Of course, there was no more thought of singing; the question was one of getting breath enough to live on. He at once tried that good old-fashioned remedy, mustard plasters, putting them on his chest and perhaps on his back between the shoulder blades. They relieved him for the time, as we might expect. But mustard plasters do one thing—no more. They draw some blood from the inflamed parts to the surface; that's all. When they have set up a bit of mild counter-irritation they are done; they don't get down to deep uses. And here there was a deep cause. We will point it out. There was a constant whistling noise in his throat, he says. You hear it in children when they have croup. It means that the air passages are contracted and the breath has to pass violently through small orifice. Disease has often strangled people to death that way. "Next," he says, "a violent cough set in. I coughed and this meant more and worse inflammation, and shows us the spectacle of Nature trying to get rid of the product—the phlegm or mucus. But to cough night and day! Think of it. What becomes of a man's appetite and sleep? You can imagine. No wonder the doctor at Merthyr was anxious and suggested a change of climate.

Still, Mr. Price, as we have said, remained at home and consulted his physicians, one at Dowlais and one at Hafod. All the doctors agreed that their patient was suffering from acute bronchitis, and very properly treated him for that. Yet somehow their medicines failed to effect any real and radical good. That they were temporarily helpful we may not doubt. But, you see, bronchitis, once seated, is an obstinate and progressive ailment. It has a tendency to take to new ground and to get down on the lungs, the reason being that the lining of the air passages and of the lungs is all one thing. So an affection of any part of it, if not cured, spreads like fire in dry grass. "As time went on," says Mr. Price, "I got weaker and weaker and my breathing became distressing to hear. All my friends thought I was in a consumption, and as a sister of mine had died of that complaint, I naturally felt alarmed. Indeed, one night in July, 1885, I was so bad that my wife thought I was dying."

Happily the lady was mistaken, yet death sometimes comes with awful suddenness in that complaint, and her fear was very reasonable. At that time, please remember, our good friend had suffered about four years, and was in a state of low vitality. The whole body was feeble and exhausted, and there would have been nothing surprising in a fatal termination. But a better result was in store,

Mr. Price's letter, dated August 16th, 1893, concludes in these words: "Better and worse I continued in the power of this malady year after year, and had given all hopes of ever getting better. In February, 1887, after having endured it 5½ years I read of a person at Pontypool having been cured of the same thing by Mother Seigel's Curative Syrup. I got a supply of it, and in a few days I felt relief. I kept on with it and gradually improved. In six months the cough had left me and I was a well man. Since then I have been sound as a bell. If you like you may publish my statement and I will gladly answer any inquiries. (Signed) Emrys

Good! That is pleasant and cheering to hear. One word—an important word. Bronchitis, pneumonia, rheumatism, gout, nervous disorders, liver complaint, kidney trouble, and most of our familiar diseases are caused by poison in the blood; and the poison is produced by stomach fermentation, indigestion, and dyspepsia. Consumption itself comes in the same way. Mother Seigel's Curative Syrup drives out the poison and stops the manufacture of more. That's why it cured Mr. Price and will cure anybody.

Planters' Library.

The Wynaad and the Planting Industry of South India.
By "Francis Ford," Re. 1.

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" Planting in Ceylon	...	...	0 8 0
" by Bidie	...	...	0 8 0
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" Nilgiri Tea Planter, McPherson	...	...	1 0 0
" Planting in India	...	...	0 12 0

P.S.—Any books required, not in the above list, we shall do our best to procure and forward by Value Payable Post only.

"PLANTING OPINION," COONOR.

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PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, MAY 15, 1897.

[No. 10.]

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 28th May 1897.

Central Travancore.

Every available cooly on plucking. *General Health*.—Good. *Labour*.—Somewhat short.

Nilgiris.

SHOLUR, 9th May.—Since last report, lowest and highest temperatures between 6 A.M. and 6 P.M., 57° and 81° respectively. Rainfall from 1st January to date, 7.09. Tea flushing very freely. Labour plentiful, but a good deal of sickness amongst Badagas and Canarese children. Grains in the local bazaar becoming cheaper.

Coorg.

POLLIBETTA, 11th May.—*Weather*.—Sun very hot. Hardly any signs of rain beyond thunder and lightning in one or two directions on one or two days, and just a few drops on one day last week. A Scotch mist on last night. A perfectly cloudless sky to-day with high East wind, which means that the much-needed rain is deferred for some time longer. *Crops*.—All berries left of the first set are

coming on after last showers. Rain required to bring on berries of last set which appears to be fairly good in parts. A feeling seems to be gaining ground that crops have been under-estimated; that they won't be quite as bad as was at first feared. *Plant Diseases*.—Excepting that some borer is showing up, coffee generally is looking healthy. *Labour*.—Coast contractors beginning to put in an appearance, but work generally held in abeyance for want of rain. *General Health*.—Fevers prevalent.

S. E. Wynaad.

PUNDALUR, 11th May.—*Weather*.—1st, 2nd, 8th and 9th inst. we have had very heavy rains, followed by heavy winds, and since every evening very cloudy. Grain is very dear. I do not know why the rates are equally charged for wet and dry lands without any distinction. Coffee, cinchona and tea are cultivated on dry lands and are permanent cultivations, and so the rents charged on dry lands are bearable. The paddy and other cultivations are temporary cultivations half of the year; the wet lands are cultivated and half of the year are lying vacant, and when the case is such, the rents are equally charged and unbearable on wet land. Since the Revenue Settlement came into Wynaad, the cultivators have got very poor and are living from hand to mouth, owing to the high charges of rents paid to the Government and jenmabogham to the Jenmis. Owing to this the cultivators have relinquished many portions of lands and thereby caused loss to the Revenue Department. Very likely the Government may think that it is the fault of the cultivators for not ploughing, deeply manuring, weeding and watching. I have tried three years successively with Mysore, Coimbatore and Palghat cultivators with this trial, the paddy grew more luxuriantly and fell down and got 10% paddy and 90% husk, and thereby suffered heaviest losses for the three years. A cultivator is always very avaricious to cultivate and store at least one year's good supply of grain for his work people and family; with this anxiety he works throughout and yet he can't get it, and I will repeat once more the Honorable Mr. Rees' words pronounced at Calcutta: "The agriculturists are poorer now and more highly taxed than they were in the good old times." Worse in Wynaad I can say. The paddy fields in Wynaad are entirely surrounded by jungles, and owing to this the wild beasts and birds are the worst enemies; also to prevent this, the "Arms Act" is in the centre. Land owners who are pay-

ing rents above Rs. 20 should be excluded from "Arms Act" which will be a blessing from the Government for the troubled ryot. From next fusli and as a mark of the sixtieth Reign of our most beloved Mother and Queen, I would advise the Government to consider the above and reduce the rents on grain cultivations, charging differently for Government and jenmi lands and exclude the ryot who is paying a rent above Rs. 20 to the Government from the "Arms Act." The present District Magistrate did a wonderful and charitable work for the poor pariahs in Chingleput while he was in charge of that district; and when he was as Head Asst. Magistrate, Nilgiris, some years back, he was a very strict master for the officials, and did some good also to the public by going into the shandy bazaars in Wynaad and noticing the merchants who were using false weights and measures; in like manner, I trust that this will get into his hands and that he will consider and do some good for the ryots, and then there will be plenty of lands taken up and the revenue increased.

GENERAL NOTES AND ARTICLES.

PROFIT SHARING.

EACH year the labour question seems to develop new difficulties in the planting districts of India and Ceylon. Any attempt to solve, or even partially solve the great problem, is worth attention. Yet we fear the very novelty of the subject of this article: *i.e.*, how to devise a method of rendering the interests of plantation labourers identical with that of their employers, will arrest less serious attention than it undoubtedly deserves. It is a very old and sound text our remarks are based on: if you want a man to take a real interest in your business, make him a part of the concern: there is no interest greater than self-interest.

Profit sharing has been attempted on some Straits Settlements estates, and with, we understand, excellent results. There is no obvious reason why something in the same line should not be attempted in India. We have but sketched the roughest of outlines of the scheme, it needs careful thought and experiment to put it on a practical working basis.

In the March number of the *Hawaiian Planters' Monthly*, the organ of the "Hawaiian sugar planters' association," appears a very interesting article on the above subject by the Hon. Mr. P. C. Jones.

Mr. Jones discusses the labour question very thoroughly and shows not only what is being done abroad in establishing mutual co-operation in large enterprises, but the advantages of introducing the system in the Hawaiian Islands, and thereby providing a more intelligent and permanent population.

Various methods have been tried at various times in farming, mining and manufacturing, by which the labourers have to a greater or lesser extent participated in the profits of the business. There are objections to this in agriculture, as it does not encourage the farmer to make improvements: time wages, piece work, and quality prizes,

percentages on sales, etc., have all been tried with more or less success but do not quite touch the subject.

Mr. Jones quotes two letters from sugar planters showing how the system has worked on the estates in their charge. The first letter is from a Mr. D. W. Goodall, of the Onomea Sugar Co., Papaikou, Hawaii, who purchases his cane from his men by its estimated weight. The second letter is from Mr. Wm. Kinney, late Manager of the Honomu Sugar Co.

Mr. Goodall, on behalf of his firm, gave out contracts to one of his men thus: The planter (as the cultivator—Chinese, Japanese, or what his nationality might be, is called) was paid a stated sum per acre for the plot he cultivated, with a proviso for a bonus on the yield if it exceeded 4 tons cane per acre, and a forfeit if the yield fell below the four tons per acre. The result was in a way satisfactory. The yield was in excess and a bonus was paid the planter by the Company.

Mr. Goodall mentions another contract made with a Japanese gang, by which he paid a stated sum per ton of cane delivered alongside the flumes. The result was altogether satisfactory, as the men made from \$3—\$10 per month more than they could have made by plantation work (time wages). The cane was as cheap and the fields were as well kept.

With the Japs and others who raise cane in small lots he has no contracts, but his system is as follows;

Any man who wishes to raise cane is given the free use of land in ravines or on side hills too steep for ploughing by animals, or small outlying patches, etc.

The planter clears the land, prepares it for planting by hand, plants it with seed which he gathers from the Company's fields free of charge.

When planted he cultivates it, cares for it to maturity by his own labours or that of other men whom he may hire. When ripe or at a time convenient to the Company, the cane is cut, weighed and carried to the flumes by the Company free of charge to the planter. Cane grown thus commands \$3 a ton.

The cane is grown in patches of from quarter of an acre to 3 acres, and comes in in lots of from 10—200 tons.

The work is done in the men's spare time—evenings, holidays, and to a certain extent on Sundays; so it is hard to get at the actual cost to the planters, but it is said to pay well, and the land is eagerly taken up.

Other contracts Mr. Goodall has, but they are much the style as the above.

Mr. Kinney works somewhat differently. On his Com-

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TERMS MODERATE.

pany's land, the planters are usually paid so much per clarifier of juice. A clarifier of juice is 500 gallons without maceration water, that is, \$8.40 per ton of sugar or 90 cents per ton of cane. This is for cultivation only. The Company has nothing to do with cleaning the ground, procuring seed, planting or harvesting. The price the Company pays is 3—6 dollars per clarifier.

There are other contracts—covering, planting and harvesting, and still others that cover everything from felling forest to delivery of cane alongside flume. Acreage of a gang of planters generally varies from 30—80 acres. Earnings per man are rather more than day wages. When a field is to be given out there is usually competition, which shows they like this way of working.

By usage or dastur as we say here, many things are understood which are not mentioned in the contracts (1) for bad work, slothfulness, harbouring deserters, cheating in the day's check roll or having a disorderly camp, the contract may be cancelled.

(2) Exchange of work. Sometimes the best gang get behindhand, then the Company lends time labour. And later when the Company with its daily labour gets behind and the gang is abreast of its work, the Company borrows labourers from the gang till the account is squared.

On the whole Mr. Kinney finds this system of work pay. Yet it is not the system which could be brought into operation with tea; for though doubtless we could get the leaf to the factory in good condition and yet keep the estate properly plucked and worked if we gave the various fields out on contract, yet we should have the leaf coming in very irregularly, sometimes in dribblets, sometimes with a rush, and tea leaf cannot wait like cane without very rapidly spoiling.

Yet there is a way by which all might participate in the profits and which would, I fancy, do much to attract a good class of labour. Of course it would take some time to make them understand the principle of the thing, but I think that as soon as Ramaswamy and Karapie found that if they worked well and steadily all the year round they would, if the estate paid, receive a santosum, they would work better and more intelligently than they often do at present. Now they have no incentive to work better than the usual average, and for this reason: "the master," they say, "is contented with so much work per diem; if any one of us goes and does better, he'll keep us up to the higher standard of work; good for him, but bad for us." Now if they understood that their best work meant not only Rupees in the master's pocket but a proportion of pies in their's. I think it would be a great incentive to them to do their best.

On an estate managed by the proprietor, I would suggest that at the end of the year 5% of the profits went to the labourers in addition to their wages. No coolie who had

worked less than 20 days per month or been on the estate less than 6 months should get any bonus. Those that had worked over 20 days a month, and had been on the estate for over 6 months, and the writer, should be paid shares out of the bonus in proportion to the total of their wages.

If the estate is not managed by the proprietor but by a manager he should be paid 5% on the profits as well. For example: Utopia estate pays well and the proprietor lives at home, but the paying condition of the estate is largely due to the excellent and hard working labour he has collected on the place. He would never have got such a manager and such coolies had he not treated them liberally and allowed them to share his prosperity. This he does by setting side 10% per annum to be divided amongst his manager and the coolies. No coolies are entitled to a share till they have been a year on the place, and to gain the bonus they must work at least 200 days per annum or more.

The profit is for last year	...	...	...	Rs. 30,000
5% is given to the manager	...	...	...	" 1,500
5% is divided amongst the coolies, writers, &c., according to their pay. The more they pay the larger in proportion the bonus	...	...	...	" 1,500
				<u>3,000</u>

The tea house writer's pay is ... Rs. 300 per annum.

The maistry's pay is ... " 180 "

50 men coolies have worked 10 months of 20 days or more and each averages Rs. 66 per annum ... = " 3,300

50 women coolies have worked 10 months of 20 days or more and each averages Rs. 48 per annum ... = " 2,400

Rs. 1,500 ÷ 6,180 Rs. 6,180

Pies 288,000 ÷ 6,180 = 46.44 pies per Rupee of wage.

This represents 5% on the total profits, and being only paid to the most reliable of the coolies comes to a nice sum each, besides being a good object lesson to the balance.

The bonus will be in this case Rs. 1,500 ÷ Rs. 6,180 = 288,000 ÷ 6,180 = 46.442 p. per Rupee (the unit).

The tea house writer will have 46.44p. × 300 = 72-9-0

The maistry will have 46.44p. × 180 = 43-8-7

50 men coolies will get on an average 46.44p. × 66 = each Rs. 15-15-5 = 818-2-10

50 women coolies will get on an average 46.44p. × 48 = each Rs. 11-9-9 = 557-4-0

1,491-8-1

Difference owing to inaccuracy in decimals placed to credit of estate = 8-7-11

1,500-0-0

Manager's 5% = 1,500-0-0

Total 10% on net profit 3,000-0-0

If the coolies 5% was divided amongst all the coolies each would get a trifling sum; taking the best only, they get a sub-

stantial bonus; it should be a powerful inducement to do good work.

To sum up. We would advise the prevailing system of wages and kanaks to remain absolutely unaltered at least until such time as the labour force has thoroughly recognised the advantages accruing to them from the new departure. Once this understanding is established, the apparent direct loss of a small fixed proportion of the profits will be indirectly recouped in many ways. First and foremost will be the permanency of the labour force, resulting in itself in the work being done by trained and experienced coolies. Secondly, the work will be far more thoroughly done, as every hand on the estate will have a direct personal interest in the results of his or her own work. We have confined ourselves strictly to the business aspect of the question, and we disclaim being actuated by any philanthropic motives whatever. Yet sentiment being, even in business, a factor of no mean importance, the humanitarian side of the problem should appeal to no small section of our readers.

Cocoa and the brokers.

Some weeks ago we had occasion to point out how the price of coffee, among other products, could be sensibly raised by direct sale to the large grocers, instead of through the usual channel of public auction. This is what the *Produce World* says on the matter as regards cocoa: "In proof of what we have written in previous numbers that there surely remains yet something to be done in the matter of bringing the planter and consumer more directly into touch with one another, it may be noted that a company has lately started with the idea of selling to the consumer at the lowest possible prices, reports that they have been successful in placing among other articles cocoa at the rate of 84s. to 85s. per cwt. of identically the same quality as that which has been offered and sold at the public auctions in Mincing Lane at as low a figure as 50s. Undoubtedly there are many difficulties the company referred to will have to encounter before they are able to get this method of trading into an easy style of working. It nevertheless shows quite clearly that the middlemen are to a very great extent to be dispensed with entirely, and we beg to tender our heartiest congratulations to the company in question on their new method of sale."

SHIKAR NOTES.

Tents.

When after shy game such as Ibex or Markhor, it is a great mistake to use white tents. They can be seen miles away, and will often frighten shy game into the next nullah before a shot is fired. Another fault is to camp too near the ground which the game frequents. Camp 3 to 4 miles away and move up one's bedding and food to within a mile and a half of your hunting ground and sleep out for a night or two under a rock or tree, and use as little fire as possible. Start in the morning before daybreak and by the time you can see a hundred yards, you should be above your game. After this

it is merely a question of sharp eyesight, patience and straight shooting.

Colour of clothes.

Few men realize how much depends on the colour of their clothes in shikar. Down here in the South I suppose the best is the green Cannanore cotton shikar cloth. In the Central Provinces a reddish khaki is best. Up in the North, in the plains the soil varies from red to greyish, and you must match your clothes accurately to the colour of the soil, or your bag will be small. But it is in the Himalayas that you must be most careful. There the usual colour is a reddish grey of various shades. A white puggree or indeed any prominent colour, and your game will spot you miles away across the nullah in that clear air. Of course the colour varies a great deal. There is a hill up Gilgit way where you must wear black, or nearly black. In fact match the rocks that strew the hill. Up in Lodak a dark brownish grey is best. In Cashmere itself usually a darkish neutral grey is best. But in the early autumn when the grass slopes turn reddish yellow, a light reddish yellow is necessary. If you have got the right colour (the under fur of a red hill fox is a good tone to imitate) and keep still, game will feed right up to within twenty yards of you, without suspecting your presence, provided the wind is right. In the Hills everyone wears "puttoo", the natural-coloured woollen cloth of the country.

Grass shoes.

These are worn by all the village people in the Himalayas. They are made of rice straw, willow-bark, wild indigo fibre, or cotton rope. Those made of rice straw are the commonest. Next come those of willow-bark; those made of indigo are not so common; the cotton ones are little used, as though they are the best they are the most expensive. The shoe is a woven sole of rope, with loops at the side and a loop that passes between the first and second toes. A piece of rope, the continuation of the sole of the shoe, passes to and fro across the foot and through the loops, holding the shoe firmly to the foot. With the grass shoe must be worn a special knitted sock with the big toe separate; over this comes a sock of the same shape made of puttoo, flannel, or leather and lastly the grass shoe or sandal. This shoe is indispensable for shikaring over bad ground, as it gives a most wonderful foot-hold, and with it also one can walk almost absolutely silently. It has a further recommendation in that a pair of rice straw shoes can be turned out in 15 minutes by any hill coolie at a cost of one or two pies.

They would be excellent for stalking the Madras ibex of the rocky hills of the Koondahs. Anyone wishing to get them could do so by applying to Cockburn's Agency, Srirangur, Cashmere, at a cost of 14 annas a pair for the cotton shoes, and a rupee to one eight for the puttoo socks.

Rifles.

Every man has his own ideas on this subject and few can get hold of quite what they want. My own battery at present consists of a D.B. 500 express, a D.B. 12 bore rifle and a D.B. shotgun that takes ball as well, and a rook-rifle. But this does not represent my ideal battery by any means. That would consist of a pair of heavy D.B. 577 Magnum express rifles shooting a heavy express bullet with a small hollow in front. Cogson and Harrison, London, are now advertising these bullets. A pair of 450 Magnum express rifles to take the

avy bullet as above. A single barrel Martini-Metford to
ke the '303 cartridge and the Dum-Dum bullet, and a 12
re shot gun for small game, but which would fire ball out
both barrels. The two '577 rifles should suffice for all
avy or dangerous game, such as elephant, tiger, gaur,
ar etc. The two '450 rifles would be ample for deer of all
nds and wild goats. A pair of rifles of the same bore are
variably of more use than a pair of different bores, as the
tridges can't get mixed and at dangerous game, two shots
ometimes fail to stop. A shot gun is always useful, and
e little Martini '303 rifle, which should only weigh
bs., will enable you to get in many a long shot that other-
se would be missed. It should always be ready to hand,
her carried by oneself on one's shoulder—it is so light
at it does not tire you—or close to you by a good coolie.
fact you should never stir without it. For if properly
ed you can kill anything with it from a squirrel to an
ephant.

RHEA FIBRE.

Ceylon.

A good deal of attention has been
attracted in Ceylon lately to the cultiva-
on of Rhea, and on March 8th last we published an article,
ys the local *Times*, stating how matters then stood with regard
the industry, and to the Syndicate which had been formed to
arry on the cultivation of Rhea fibre on a large scale in the low-
untry. In another column to-day the subject is continued,
nd the announcement made, we regret to say, that the local
hea Syndicate is to be voluntarily wound-up, the prospects
efore it not being such as to justify its continuance, as the
tainty of prices continuing remunerative for its product is
ery slight. The cause of the feeling of insecurity on the part
of the Syndicate is that it has no guarantee that the prices paid
for the first shipments of Rhea ribbons will be maintained.
efore the articles manufactured from Rhea fibre can be turned
ut, as we have already pointed out to our readers, Rhea has to
ndergo a variety of processes. The mere stripping into ribbons
only one part of the trouble; the remaining processes are
that the Rhea Fibre Treatment Company have taken out their
atents for and at present hold, in a way, a monopoly of. It
an easily be seen that, as their supply of Rhea ribbons increases,
hey have it in their power to reduce prices, and in this way the
ultivator might in the course of a few years be forced to sell
is ribbons at a loss. Capt. Whitley, doubtless, had this possibi-
ty in view when he wrote out that he was prepared to make
contracts for regular supplies. At present the Rhea Fibre
reatment Company find ribbons scarce; the cultivation of
hea grass has not been largely taken up yet; and we believe
hat suitable ribbons put on the market now would command as
uch as £20 a ton. But that that figure stands little chance of
eing maintained there is good evidence of already. The local
yndicate was originally offered £16 a ton for its produce; now,
aptain Whitley only holds out a definite offer of £10 a ton,
with a hint of a slightly increased price for early shipments,
nd from £16 to £10 is a long drop. Then, the Rhea Fibre
reatment Company in their annual report, which was sub-
mitted at the annual general meeting of the Company, held at
he Café Monico on March 31st distinctly state that their
egotiations with cultivators "have occupied a considerable
ime, and the Directors consider from the experience which they
ave gained, and with new sources of supply opening up, they
ay reasonably anticipate a reduction in the cost of the raw
aterial," and the Chairman of the Directors of the Company
Mr. W. J. Cordner) in his speech at that meeting, said:—
We have made contracts for the growth in and supply from

Brazil, and Paraguay, and the shipment of supplies from Ceylon,
the Straits Settlements, Singapore, Borneo, Java, Sumatra,
Mexico, Jamaica, Fiji, the Sandwich Islands, and the Pacific
Islands. All this has entailed a very considerable amount of
negotiation both personally and by correspondence, and in these
negotiations every care has been taken to make the closest and
best contracts, and *contracts which will admit of reduced prices
afterwards if necessary.* If no more has been done in the way
of cultivation in the other places named by the Chairman than
has been done in Ceylon, the Fibre Treatment Company are not
likely to receive an extensive supply of Rhea ribbons for some
time to come; but apart from that, in the face of such state-
ments as we have here put forward, one cannot be surprised if
Ceylon planters show themselves chary of taking up the cultiva-
tion of the new product.

The pamphlet compiled under the
A New Book on Rhea. direction of the "Rhea Fibre Treat-
ment Co., Ltd." contains most useful information relative to
Rhea of great interest to planters throughout India, Burma
and Ceylon. Samples are furnished of the raw material and
of the finished articles produced from the fibre by the Gomess
Process. First we have Rhea ribbons, filasee, sliver and dyed
yarn; then plushes, cloths and materials, some of them rhea
and silk mixed. These last are very beautiful and make one
wish for clothes made of them, so light, and of such fine texture
are they. Four well executed woodcuts are given. The first
illustrates the Rhea (*Bæhmeria Nivea*) plant as grown in a
clump; the second its leaves and its flowers male and female
and its seeds (natural size and magnified). The leaves, flowers
and seeds of the Rhea (*Bæhmeria paya* or *Maoutica paya*),
and of the Nilgiri Nettle (*Urtica heterophylla*) are similarly
pictured. The "Introduction" consists of an article on the
subject of Rhea entitled "A New Industry," extracted from the
Times of 10th August 1896, and an excerpt dated the 20th August
1896. A long list of authorities referred to in the compilation
of the pamphlet is given, followed by another indicating the
botanical names of the several species or varieties of the rhea
plant grown in various countries. Next we have the heading:—
"Nomenclature;" "Cultivation of Rhea—General Remarks on
Cultivation;" "Cutting and Gathering the Crop and Yield;"
"Stripping the Ribbons;" "Drying;" "Baling;" "Cost of
Cultivation;" "Short History of Rhea Fibre," etc., etc. The
brochure is a veritable *multum in parvo*; and those of our readers
interested in the subject and who purpose making trial of rhea
cultivation, would do well to procure a copy for reference and
study.

RUBBER CULTIVATION.

A VERY well-known Mysore planter, Mr. J. A. Harris,
asks elsewhere for information regarding the prospects of
rubber-cultivation by planters. Eager as we have always
shown ourselves to support the introduction of new staples,
we find it difficult to say very much in favour of rubber
plantations. In fact, considered as self-plantations, *i.e.*
gardens opened up wholly in rubber, the cultivation of this
product has so far proved the reverse of remunerative.
Almost everything depends on the varieties chosen, and
experiments with the best-yielding jats are too recent for
reliable information to be obtained. Interplanted in coffee
or tea at suitable elevations and in a congenial climate,
there might accrue, in time, profitable returns. Ceylon has
shown India the way, as in numerous other new products,
and an ex-Ceylon planter gives us the following informa-
tion on Ceara rubber, the variety most largely cultivated.
It may be mentioned, however, that it certainly does not

pay, and further that the most desirable jats are Para and Castillea, and the newer African rubber-vines. To return to Ceara. It is very difficult to germinate artificially, though in natural germination, i.e. from seeds dropped under the trees and allowed to spring up at will, huge quantities of seedlings may be gathered. The seed has a very hard shell, which may be filed off to hasten germination, but this is a very delicate operation, and results in a large percentage of failures. It was grown some few years ago near Kandy as a shade for cocoa, but proved of very little good, as the leaves all dropped in the hot weather. With the cold weather appeared a most luxuriant growth of foliage. Some twenty-five years must elapse before remunerative returns can be hoped for. Ceara is very liable to dry rot and white ants. Such being the case, as far as Eastern experience has gone, we print the following extract from the *Daily Mail* with hesitation, and should advise our readers to accept the statements therein with caution:—

A natural product costing 6d., and worth 2s. 4d., leaves a nice margin for profit, and is exactly what this great trading nation is looking for. A few years back, India rubber in large quantities could be bought from native collectors at 6d. per lb., or even less, but that halcyon time for the coast trader is over, and will never return. Everywhere the natives are very much alive to the value of rubber as a commodity; besides, they have to travel much greater distances for a supply than formerly was the case. To-day India rubber can be grown very much cheaper than the 'wild' product can be purchased, and, as might be supposed, the quality is far superior. Appliances can be made use of, insuring a product of even value, and worth at least 55 per cent. more than the mixture of rubber, dirt, leaves, and bark, prepared by ignorant natives, which is sold as "caoutchouc" at high prices on the Liverpool and London markets. It is this certainty of a greatly improved product, which makes the prospects of rubber-growers so alluring. Para rubber, which is coagulated on an excellent system, is worth 3s. 7d. per lb., and all that is required to make other varieties equally valuable is brains. Experts declare, and have proved that castillea rubber may be cultivated in any quantity at a cost of 6d. per lb. There is no difficulty about it, no expensive plant or machinery is needed, as in the case of coffee, cacao, vanilla, etc., and the risk of damage to the crop is practically nil. Hurricanes and tornadoes may blow, if they will, but unless they uproot the tree—no easy matter, with its firm and deep hold on the soil—they cannot hurt the rubber, which, in the form of sap or milk, lies perfectly secure beneath the bark. Having bought or leased the land, the rubber-grower may please himself about clearing it. This is not absolutely necessary. If he does not want any side-crops, such as bananas, coffee, cacao, or vanilla, all that he need do is to cut paths or lanes at intervals through the forest, and plant seeds, or saplings every fifteen feet or so. The castillea is a forest tree and

WILL THRIVE IN ITS NATIVE JUNGLE

just as well as on cleared and cultivated land. The best method, however, is to plant year old seedlings, raised in a nursery, on cleared land, in groups of two or three. If all thrive, the surplus ones may be taken up and planted elsewhere.

In five years from the sowing of seed, the young castillea, if planted in a favourable situation, will be 30 feet high, and the trunk at least 20 inches in circumference. It may then be tapped—that is, grooves are cut in the trunk and receptacles placed beneath to catch the milk which oozes from the incisions. The milk may be coagulated in various ways. The careless native, who is content to dig a small pit or basin at the foot of the tree to receive it, and with it all the bits of bark and leaves that chance to fall into the hole, does not put himself to much trouble. A common practice is to mix the milk with a decoction obtained by boiling the stems of a species of wither which partly coagulates it; then, having levelled a patch of ground say four yards square, he pours the whole over it. When the sun's rays have evaporated the moisture, and turned the rubber black, he rolls it up into sausage form, and in that shape sends it to the nearest trader. White men have improved vastly on that happy-go-lucky method, but, unfortunately, except on the few plantations, the white man seldom has the opportunity to exercise his skill. If he

attempted to supervise the methods of the natives by accompanying them into the jungles, it would be at the risk of his life. Collecting wild rubber is not an occupation for Europeans; in all ways it will pay them better to grow their own trees.

The five-year old tree, if well grown, will yield 2½ lbs. of rubber worth 5s. 3d. in England to-day. If the wounds are

FILLED WITH WAX OR CLAY

after the sap has ceased to run, no injury is done to the castillea which may be tapped six months afterwards, and once or even twice annually, for twenty-five or thirty years, or more. Every year for a certain period, the tree will yield an additional pound at no extra cost. A bi-annual weeding is all that is necessary.

British experts who have studied rubber growing in Central America and Mexico prefer not to tap the tree until it is eight years old. Nothing is lost by sparing it, for the eight year-old tree, never previously tapped, will yield on the average 5 lbs. of rubber worth 11s. 8d. at present values. An acre of land will support 200 trees, and the gross annual income from a 100 acre plantation, eight years old, may therefore be easily calculated; 20,000 trees, each yielding 5 lbs. of rubber, of the value of 11s. 8d., would give the fortunate planter a return of £11,666. Sir Henry Dering, Bart., C.B., H.M. Majesty's Envoy Extraordinary to the Republic of Mexico, in a Foreign Office report dealing with the productions of that country estimates the cost of establishing a 500 acre plantation of *castillea elastica* to the end of the fifth year at £2,708, and the net profit the same year at over £10,000. As these figures are based on a selling price for the rubber of 1s. 1d. per lb., and it is now worth from 2s. to 2s. 4d. it will be seen that there is plenty of margin for accidental losses, which never, however, seem to be incurred in rubber growing. A thievish native might come in the night and tap a few trees but, as he would have to wait for the milk to fill the hole he had dug, and for the sun to coagulate it into rubber, he would run a serious risk of being caught in the act. The fear of having his rubber stolen—a not very serious contingency—appears to be the only thing likely to vex the rubber grower's puriferous dreams.

There are already a few plantations in Mexico, one, La Esmeralda, is said to comprise half a million eight-year old trees. The tapping of these still shortly begin and the annual value of the product may be readily estimated on the basis of the figures given.

PHOTOGRAPHING IN TROPICAL AFRICA.

BY LIONEL DECLE.

THE following hints should be of distinct use to the rapidly increasing body of amateur photographers in our planting districts:—

Almost every traveller or explorer who visits Africa takes along with his luggage a photographic apparatus, but unfortunately very few succeed in bringing home a series of good pictures. Having myself considerable experience in photographing in tropical regions, I will try to give as briefly as possible the result of my experience. During a five years' journey round the world, I took nearly 4,000 photographs. More recently, when I crossed Africa from the Cape to Uganda, from 1891 to 1894, I took over 400 photographs. During these journeys I have tried different apparatus and have tested almost every brand of plates and films, and I have been able to determine what is the most useful outfit to be recommended to intending explorers.

Camera.—To insure success it is necessary to have a strong camera of the simplest make but powerfully constructed and abundantly supplied with brass bound—5 by 4 and half-plate are the most useful sizes. The camera should rest on a strong stand, so-called detective or heavy cameras being useless toys. The stand must be very strong, so as not to be shaken by the wind. Double dark slides should not be used as they invariably let in the light after some time. The most practical way of carrying plates is by using one of Hare's changing-boxes. I am actually using one that has already been three years in Central Africa and six months in Madagascar. It has been through more than 400 days of rain, and has never been out of order. Two lenses ought to be used—a rapid rectilinear and a wide-angle lens—both fitted with iris diaphragm.

Plates and Films.—I have tried both, and I have no hesitation in condemning films for tropical climates. It is a mistake to imagine

weight is of great importance in Central Africa. When you travel with a caravan, the average amount of luggage, camp material and trading goods required for a journey of twelve to eighteen months is from 8,000 to 10,000 lbs. A difference of 50 lbs. more or less is therefore of no consequence. The plates which I have found most satisfactory are Wratten & Wainwright's. Out of nearly 5,000 of which I have used I never found a bad one, and they stand heat and cold equally well. It is worth describing the extraordinary tests I have subjected them to. In 1891 I started from the Cape with three boxes of the plates. During six months they were carted about on waggon, being jolted in the most terrific fashion, but not a single plate was broken. In the Calahari desert I met with a mishap, and had to leave most of my goods behind me, proceeding with a few loads to the Zambezi. When I returned three months later I found that the plates containing my plates had been left in the open during all the time in the rain. When the case was opened the cardboard boxes were so soaked that they dropped to pieces. I dried them in the sun, and then tried some of the plates I was astonished to find that none of them were spotted and all of them were quite as good as before. In the two years following I took all my photos on these plates, and all the pictures turned out excellent. I must, however, recommend the ordinary (slow) plates. Using a Dalmeyer's rapid rectilinear lens with the smallest diaphragm, an exposure of two seconds can be made in the brightest sun, and the picture so obtained is quite soft and full of details.

Development.—If you want to obtain good results, it is necessary to develop the plates as you take them. This can be easily done by using a portable tent—a box covered with a dark cloth that you can round your waist. Fresh chemicals and great cleanliness are indispensable. The question of chemicals is a difficult one to solve—I only advise the use of pyrogallic acid and ammonia, especially with Wratten's plates. The solution with which I obtained the best results is the following:—

Pyrogallic acid	...	...	...	...	20 gr.
Water	...	...	...	...	2 oz.

Add to the above 12 minims of the following solution:—

Ammonia solution, '880°	...	...	...	1 dr.
Water	...	...	...	1 dr.
Bromide of potassium	...	...	...	8 gr.

Up to 20 minims of this can be added to the pyro solution, but have this amount there is great danger of getting a green fog. I find much difficulty in preserving pyro and in keeping ammonia from evaporating, but Messrs. Burroughs, Wellcome & Co. solved this difficulty for me. Their compressed "tabloids" of pyro can be kept almost indefinitely without turning black, and each "tabloid" being accurately weighed, a fresh solution can be made instantaneously for each plate. They also supplied me with '880 ammonia in hermetically sealed tubes, each containing 1 dr.—sufficient to develop up to eight plates. Messrs. Burroughs, Wellcome & Co. now manufacture a whole series of photographic "tabloids."

I would again insist upon the necessity for cleanliness. In tropical climates solutions get readily oxidised, and it is absolutely necessary, after developing each plate, to thoroughly clean the tray and the developer-glass. When the plate has been fixed, it ought to be well washed and then immersed for at least a quarter of an hour in a strong solution of alum. When taken out of the alum-bath the plate must be dipped in a basin of water, lightly rubbed all over with the fingers, and then washed over with running water.

To pack up negatives they ought to be placed face to face with a piece of paper between them. Each dozen is then tied up in a piece of paper, fastened as tight as possible with a small string, and placed in the original cardboard box. If the plates are packed very tight together, they are absolutely safe and run no risk of being broken.—*Chemist and Druggist.*

PINEAPPLES ON PLANTATIONS.

KNOWING how extremely well pineapples grow in parts of the Nilgiris, Wynaad and elsewhere, it certainly seems strange that no decided attempts have been made to extend their cultivation on a large scale. It will be seen from the interesting article below, taken from the *Produce World* that possible profits run up to £20 per acre in Queensland

There is no reason why, with our cheaper labour, results approaching these should not be obtained in India:—

A new industry, capable of indefinite expansion and requiring only ordinary ability and a modest initial outlay, is obviously the desideratum of many seeking for new financial pastures and fresh commercial fields. All around us the existing avenues of enterprise are being rapidly filled by competing capitalists or syndicates, and openings wholly new and easy to profitably fill are in increasing demand. Happily in our great Colonies there are still many openings, corresponding to the above description, which await only the advent of steady industry and a modest outlay to secure a regular and an increasing return. The great Colony of Queensland, Australia, is a conspicuous example of this fact; but in respect to many of the mercantile potentialities of this vast and generally very fertile region, absence of population, want of good communications, and a too prevailing ignorance of the facts in each case, have conspired to prevent up to the present time the successful exploitation of several promising fields for highly-productive industries which could very easily be placed upon a sure and permanent basis of well-assured profit for those combining industry, intelligence, and some amount of capital.

Unquestionably one of these as yet untouched sources is pineapple cultivation. This simply awaits the careful settler, and is a thing which, if properly organised and systematically pursued, should yield considerable profit. In a publication issued from the Queensland Government Press at Brisbane, we read that "Nothing surprises the horticulturist so much on his first arrival in the colony as to see those plants on which it has been usual for him to expend all his skill and ingenuity to induce them to thrive in the old country, growing with a luxuriance it was impossible for him to anticipate." A striking instance of this fact is furnished by the pineapple (*Ananas* or *Sativa*). In England, to raise pines to perfection, it is essential to have an elaborate plant and great skill, a considerable capital invested, and then the market is restricted to the comparative few. True, the prices obtained are high, but the prime outlay is large and the trade is not at all extensive. In Queensland, however, the pineapple flourishes like grass in the old country, and except the banana, it yields the quickest return after cultivating for market of any fruit grown in the colony. On the sandy ridges, or the red soils of volcanic origin found in Queensland, pines grow prolifically, and an allotment of, say, 100 acres, which can be obtained on almost nominal terms under the liberal land laws of the Colony, should yield a good return.

Allotments of this kind are required to be fenced; but timber is abundant, and a wire fence with wooden poles, the latter at, say, a pound a hundred, with 6s. per chain for the wire, is ample outlay for the enclosure. To prepare the soil properly for growing merchantable fruit should cost, say, £8 an acre, and subsequent final ploughing another 40s. per acre. Lines are then marked out, and the pine-suckers, having been prepared, are planted, and the bottom leaflets are removed to afford free action to the young rootlets. The planter picks out holes with a tool some four inches deep, and it is said a smart man can plant 500 suckers in about a day of eight hours. Three thousand suckers can be put into the acre in regular rows, and in the succeeding summer the stronger of the suckers will be bearing fruit. The following year fine fruit may be confidently looked for, and it is calculated in the authoritative paper published by the Government that 2,000 pines will be fit for market. The average market price is put at 2s. 6d. to 3s. per dozen. Thus a return of £20 per acre may be obtained. These figures have been said by some to be too large, but, allowing for this, it is clear that the return is very handsome. Should, however, the cultivator take extra pains in regard to weeding, and to careful selection of suckers, fruit fine enough to be worth 6d. each can be grown, and then the return is really enormous. In a few years, indeed, the plants become a solid mass, and the necessary paths are kept open by the use of the bill-hook.

Unlike viticulture, pineapple growing so far has been attended by no loss through disease attacking the plantations, and year by year the pineapple farm becomes more valuable. In the beginning settlers are advised to commence in an allotment of comparative small area, and then, aiming always at quality first and quantity afterwards, acre after acre should be added until really large crops of the best fruit can be secured. After the initial planting one man with a horse, a small plough, and a scarifier should be enough to keep ten acres in proper order. Probably a well-arranged plantation will keep in thorough working condition for twenty-five years.

Among the varieties of pines grown in the colony may be cited the following:—The Ripley Queen, which is described as first-class in every way, and having large fruit with fine flesh of excellent flavour. The Common Queen is very prolific, and of good average quality. Then the Smooth-leaved Cayenne is a strong grower, and a large fruit of capital quality. When really well grown this pine attains a weight of 10 pounds, and even 15 pounds. The Providence is likewise a strong grower, and yields a fruit of considerable size, but it does not bear so prolifically. Another notable pine is the Charlotte Rothschild, which yields a very large fruit, and besides these are other varieties.

There can be no doubt that pineapple culture, on a systematic basis, would be found a highly profitable industry in Queensland. Fruit-growing has been, on the whole, a much-neglected industry in the Colony, as may be easily inferred from the fact that so much has been imported—a thing eminently surprising when one considers how greatly are the facilities for raising some of the finest fruits in the world, either for home consumption or for export to the Mother Country. About the Mackay districts there are vast areas covered with wild pines, only waiting the careful hands of the cultivator to convert them into really merchantable produce. Then, too, there is the question of the fibre, as some experts think that wild pines might be made to yield fibres of no inconsiderable commercial value. At present quantities of pines are imported into this country, but, if only the splendid native pineapples of Queensland were improved by careful culture, they would certainly find in this country a profitable market, and would in all probability ere long hold the field. To bring this about needs but a comparatively modest outlay, and the taking up of, in the first instance, of comparatively a small area. One thing that should greatly encourage the Colonial cultivator is the fact that throughout the United Kingdom the consumption of fruit is on the increase, and that in a most remarkable manner. Fine Queensland pineapples, if placed regularly on the home market in really good condition, would most unquestionably command a ready sale, and at prices yielding a very handsome profit to the producer.

LETTERS TO THE EDITOR.

RECIPES.

SIR,—In reply to "Anglo-Indian," she will find all the recipes she has asked for, and many more, in the "Madras Cookery Book" by an "English Lady," published by Messrs. Higginbotham & Co. at a cheap price.

ANOTHER PLANTER'S WIFE.

OLD MYSORE COFFEE.

SIR,—In *Planting Opinion*, April 3rd, page 258, I find the following in an article on "Old Mysore Coffee" signed by Mr. Fred. D. Meppen:—"At that time there was perhaps no other place in India where such fine and venerable old coffee trees were to be seen as in the Mysore province. Many of the native gardens were much over a hundred years' old, in which may be seen coffee trees with stems from ten to twelve inches in diameter."

Can Mr. Meppen kindly state the exact locality where these coffee arabica trees are to be seen? Are the figures given the result of actual measurements, or merely estimated? And has Mr. Meppen any specimens (cross sections) of these fine trees?

5th May 1897.

ENQUIRER.

RUBBER.

SIR,—In view of the greatly increased consumption of India rubber, planters might possibly turn their attention with profit to the growth of rubber trees. Some ten or twelve years ago a considerable number of the Ceara species were put down in this district and grew well, especially in damp places, but this essay was not persevered with, as it did not appear that the trees when tapped would yield sufficient to make the undertaking pay.

But I am doubtful whether we had sufficient knowledge as regards the proper mode of tapping, and whether we gave the trees a long enough trial (ten years). Information is very much wanting, and it is on this account that I am addressing you, in the hope that you or some one else will come forward and throw some light on the matter. I understand that Messrs. T. Christy & Co., of London, recommend a trial being given to *Castilloa Elastica*, which they say flourishes in deep loamy soil, and being a deep feeder does not exhaust the surface soil. In cocoa plantations it is used as shade on account of its rapid growth.

CHICKAHALLY, GONIBIDE,
KADUR DISTRICT, MYSORE,
27th April 1897.

J. A. HARRIS.

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contains per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Orders should be booked early for the present crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE,

SHENCOTTAH,

Tinnevely.

COFFEE.

The Market.

The enormous crops from Brazil have affected the prices of the lower class coffees most severely, while even the better grades have not entirely escaped the effects of the glut. Good Santos, for instance, was selling at 54s. to 55s. for "future" delivery in January: it has now fallen to 37s. 6d. to 40s. per cwt.

Bat Guano.

We understand on fairly good authority that there are large quantities of this valuable manure available in the Andamans. Without doubt huge quantities must likewise exist in caves all over India and in old Hindu temples. We trust soon to learn that the U. P. A. has applied to the Government for assistance in discovering supplies of this invaluable fertilizer. Roughly speaking its manurial value is just double that of the ordinary poonac.

Shade in B. C. A.

Coffee-planting in Nyassaland is in its infancy, and a vigorous childho it is. Especially in the fascinating style of paper controversy affected by those new hands who have scarcely seen a tree from seed to blossom. In discussing the shade question, some men display the greatest obstinacy about shade trees being of any use whatever. One writer condemns shade because coffee under plantains and Pride of India (utterly "impossible" trees, both of them) do not seem to thrive. It would be strange indeed if it did!

Coffee.

The coffee market has been depressed by the heavy outturn from Brazil. The downward movement in prices has been very severe, the kinds of coffee undergoing the greatest depression.

ation being those below 90s. per cwt., the lower the grade the severer being the fall, which in extreme cases has amounted to nearly 16s. from the highest point in January; good Santos, which was then worth 54s. to 55s. for "future" delivery, having recently been sacrificed at 37s. 6d. to 40s. per cwt.

Hawaii. In his annual report, the Hawaiian Minister of Finance estimates that the Hawaiian coffee crop for 1896 was 757,552 pounds. There are now upwards of two hundred and fifty plantations and estates devoted to coffee planting in these islands, and there is a fair prospect that the coffee product for the next few years will be doubled each year. If so, the crop of Hawaii for the year 1900 may be safely estimated at twelve million pounds. In the opinion of some sanguine coffee planters, this is a very moderate estimate. But it must be borne in mind that coffee, like sugar, is a very uncertain crop, and it is safer always to make low estimates.

WILD COFFEE.

SOME time ago we received some specimens and seeds of an alleged wild coffee from Nyassaland. Mr. R. L. Goodlock, to whom we sent the specimens for identification, passed them on to the Kew authorities. A recent letter from W. I. Thistleton-Dyer pronounces them not to be coffee at all, the botanical name being *Cremaspora africana*, Henth, Syn. *C. coffeoides*, Hemsl.

The following account of the plant appeared in the *Kew Bulletin* for July and August 1896:—

WILD COFFEE IN BRITISH CENTRAL AFRICA.

Sir Henry Johnston, K.C.B., Her Majesty's Commissioner in British Central Africa, published in the *British Central Africa Gazette* for October 15th last the following account of a presumed wild coffee in Nyassaland. The plant, however, on examination at Kew, proved to belong to a different tribe of Rubraceæ to *Coffea*. It appeared to be a plant hitherto unknown and was described by Mr. Hemsley in the *Kew Bulletin* for January last (p. 18) as *Cremaspora Coffeoides*. The genus comprises but a few species, all confined to Africa and adjoining islands.

The Commissioner's account is subjoined:—

On his recent journey to Mlanje district, Her Majesty's Commissioner made an interesting discovery. In the valley of the little Nyungivi stream, which flows direct into the Ruu about 10 miles east of the confluence of Likubula and the Ruu, and close to the place where the Nyungivi is crossed by the main road to Fort Anderson, the Commissioner found growing species of wild coffee apparently identical with that which is met with in the interior of Mocambique, on the Zambesi, and at Inhambane. By a happy chance this wild coffee was not only in blossom, but bore the ripe berries at the same time. In growth the tree was very straggling, and somewhat resembled the original cultivated coffee tree in the Blantyre Mission grounds. This wild coffee was found growing for several hundred yards along the banks of the stream. The Commissioner collected a large number of berries, some of which were ripe, and these will be planted in the gardens at Zomba. Specimens were also collected of the leaves, flowers and fruit for transmission to Kew for identification.

It has generally been stated by the Commissioner himself amongst others that there is no wild coffee indigenous to Nyassaland, and certainly up to the present discovery it was believed that no specimens of the wild coffee had been found by any one. The Commissioner searched diligently in almost all the other stream valleys that he crossed in the Mlanje district for other specimens of the wild coffee, but was not able to find any.

It is just possible that these trees found on the Nyungivi stream close to the Portuguese border might have had their origin in seeds of the wild Zambesi coffee accidentally conveyed there. At the same time, seeing that coffee is indigenous to tropical Africa, and is found in almost all the warm parts of the continent which are not absolute deserts, it is very extraordinary that a fertile region like Nyassaland should almost alone possess no form of indigenous coffee. The Commissioner, therefore, desires us to publish this discovery for the information of planters and others who, by careful investigation, may succeed in discovering a wild indigenous coffee in the British Protectorate. Meantime he has no objections to the berries of the wild coffee growing on the Nyungivi stream (which is on Crownland) being gathered by any persons who may like to try the experiment of planting this wild coffee.

THE MARKET OUTLOOK.

THE *Triester Zeitung* is much distressed at what it states to be the utterly hopeless position in the coffee market. Our contemporary puts the blame for this upon the Brazilian coffee growers, whom it accuses not only of under-estimating their crops, but of continuing to place their coffee on the market in ever-increasing quantities, to the utter ruin of any chances of profit by their competitors. The recent reports of the extent of the Brazilian coffee crop have, according to this newspaper, completely knocked the bottom out of any hopes that the coffee trade was not in such a bad position as was represented to be the case.

In the opinion of the *Triester Zeitung* there is only one thing which will remedy this state of affairs, and that is the formation of a strong syndicate to buy the whole of the present visible coffee supply of Brazil, and all that remains in the interior, and lock it up until better times come round. Our contemporary thinks that this operation would be by no means difficult at the present moment, and that a capital of £6,000,000 would probably be all that would be required to carry it out. Inasmuch as the *Triester Zeitung* thinks that large profits might be made by this scheme, it sees no reason why capitalists should not go into it.

The *Hamburger Handelsblatt* rather ridicules this proposal, and asks—as if that were a conclusive argument—why, if there is no money in the coffee trade, a proposal requiring £6,000,000 for its realisation, should be made at all? The Hamburg newspaper, referring to an allusion by its contemporary to doctors and patients in the coffee market, rather unkindly suggests that schemes of this kind have about them more of the quack doctor than the legitimate practitioner.

The product which possesses the greatest commercial value in East and Central Africa is coffee which is grown in the Shire Highlands, within an area of over 3,000 square miles. In the last two or three years the export of coffee and the extent of the land planted have increased materially.

It is now current gossip in the Shire Highlands that Mr. Cecil Rhodes intends investing in some of the coffee estates. This is considered a very likely possibility in Blantyre, for Mr. Rhodes is well known to entertain a high opinion of the chances of profitably cultivating coffee in the territory. He has urged the necessity however, of bringing expert knowledge to bear, and if he acquires any of the plantations it will be with the intention of putting a Brazilian expert in charge of them. A Blantyre correspondent expresses the opinion that "definite experiments on a sufficiently large scale are really needed to place the coffee industry on a sound basis."

It is stated that an expert is now in Mexico on behalf of Scotch and London capitalists and bankers, who contemplate, if his reports confirm their private advices, investing a good deal of money there in the purchase of lands suitable for coffee.

This gentleman is understood to have stated that a small lot of Oaxacan coffee was recently shown in London, and was examined by the buyers of Mincing Lane, who all pronounced it far superior to the first grade Brazilian coffee, and it was at once sold at a high price, some 15s. more per quintal than the Brazilian article. When in New York he was told by large buyers that they would agree to make contracts covering a term of years for coffee of the best grade from Mexico. He is convinced by what he has seen of Mexican

high-grade coffee that there is a future before the trade. He added that in both London and Scotland there is now much interest taken in Mexico, and that a great many young Englishmen and Scots would probably come over in the next two years to learn practically the coffee and tobacco growing business.

THE HOME MARKET.

The Coffee Trade.

The following particulars gleaned from an interview between the representative of the *Grocers' Review* and Mr. Thomas Dutton, the Manchester representative of Messrs. Hanson, Sons, and Barter, may be worth attention:—Being interrogated, Mr. Dutton commented upon the history and production of coffee, and observed that he thought the first coffee that became popular in this country was that produced in Ceylon. Mocha coffee, he said, had been in the market many years, but at present it was not used very extensively, although he considered it would be better for the trade if such was the case. "How do you account," asked the interviewer, "for the gradually decreasing consumption of coffee?" "It is the same all the world over; everybody nowadays is desirous to embark on enterprises which are likely to give the best financial results, and the foundation for this decreasing consumption in coffee is due, in my estimation, to the planters, who are paying more attention to the cultivation of tea, and the lack of facilities to place the article upon the various markets at a considerably less price than is the case at present. I cannot blame the planters abroad for giving their attention to tea production, as, without a doubt, it is far more remunerative than the producing of coffee, because tea growing practically goes on all the year round, whereas in coffee there is only one crop. I should say, at all events, that the planters produce two or three pounds of tea to one pound of coffee, the consequence being that the former can be sold cheaper. Indeed, so much more remunerative is tea growing as compared with coffee that they are attempting to produce it in East Indian districts—in fact, operations have already been commenced in the neighbourhood of Neilgherry. It is now quite apparent that the coffees coming into this country from the East Indian and Mysore quarters are of gradually decreasing quantities, probably owing to the reasons I have stated. However, to the majority of the trade, this fact of the scarcity of these growths of coffee matters little, because the Costa Rica coffees are largely taking their place, the latter being now used as a 'self' coffee—one which does not require blending. The Costa Rica growths are, without a doubt, displacing those of Jamaica, Mysore, East Indian, and Plantation. The price at which an article can be sold of course has a great deal to do with its sale, and decreasing consumption for, say, some ten years, is attributable, I think, to the high—I may almost say exorbitant—prices retailers have to charge. In fact, the prices of coffee do not give much encouragement to the retail trade. You can buy tea cheaper than coffee. If the retailers could sell coffee from 1s. 4d. to 1s. 8d. for the finest, I have no hesitation in saying that a stimulus would be given to the trade, inasmuch as a demand would be created. The finest coffee at present is being sold at 2s. 2d. and 2s. 4d. a pound, whereas a class of tea may be obtained for one-third of the money. Coffee is certainly not a cheap beverage at such a price. To give further force to my argument that coffee has decreased in consumption owing to the high prices which have had to be charged, I may say that between 1884 and 1897, when consumption was very high, Costa Rica growth could have been bought at such a figure as to allow it to be retailed at about 1s. 4d. or 1s. 6d. per lb. The result of retailers being able to do this, they marched with the times and greatly increased their sales—in some cases as much as trebling their trade."

The Future of Coffee.

Asked as to the future of coffee, Mr. Dutton said: "As far as the future

is concerned, there are certainly signs of considerably heavy crops. The stocks in London and on the Continent are accumulating, with the result that during the last six weeks or two months a reduction has taken place in the quotations to the extent of 10s. to 15s. from the highest point. Reverting to the facilities for getting the coffee on the market, I may say according to various authorities they are exceptionally bad. In many places in Africa as many as 700 or 800 miles have to be traversed in order to get the coffee to the rendezvous for despatch. Indeed, I have read—and I can quite believe the statements—that it has been known that African producers have carried on their backs quantities of coffee distances of 300 and 400 miles with the sole object of getting it to the navigable rivers. In my opinion, if Africa was 'opened up' thoroughly, it would clearly demonstrate that it was a most luxuriant growing country."

The Distributing Centres.

Asked what he considered the greatest distributing centres for coffee, Mr. Dutton replied: "Undoubtedly the North of England. Very large quantities are distributed in Lancashire, Yorkshire, Durham, and Northumberland." "How do the Manchester and Liverpool markets compare with those of other cities?" "We in Manchester and Liverpool," continued Mr. Dutton, "are guided by the London market, which is, I consider, the most important one in the world inasmuch as it is the 'levelling' port. It guides not only the various cities of the United Kingdom, but the largest of the American markets. "Then, when our markets are affected, those in America are affected likewise?" "Yes, that is so; the American markets are practically governed by the stocks of the United Kingdom. "A large quantity of coffee must be imported into London. "I should think," said Mr. Dutton, "that the bulk of the coffee produced finds its way to London. There are, of course, shipments to Liverpool, but not, as yet, to Manchester. I believe there has been one though." "Do you think grocers might make more use of coffee than they do at the present time?" "Now, that is a most vital question," explained Mr. Dutton, "and one which, without hesitation, I can confidently answer in the affirmative." "Are the methods of distribution adopted by the generality of grocers bad?" "You have hit the nail on the head," said Mr. Dutton. "Generally speaking, the present mode of distribution is not a very good one."

How to Improve the Retail Trade.

"The most important feature to bring about a successful coffee trade is to pay great attention to the roasting of the article. Every grocer should roast his own coffee. I know of many gentlemen," said Mr. Dutton, "who have made a 'big' hit with roasting their own coffee, and which has proved very successful, both from a financial point of view and from the point of view of giving extreme satisfaction to their customers. I know one particular individual, and he is known to almost every grocer throughout the country either by name or person, who, some twenty years ago, only roasted about two or three bags of coffee per season, but to-day, evidently through giving strict attention to roasting and buying, his trade has developed to such an extent that he thinks little now of purchasing tons for a season. This, as you know, is a large order, and I think I am quite safe in saying that his trade has been mainly built up by giving attention to roasting frequently. A great many traders work on the old-fashioned lines, often having coffee in stock a week, or four or five days, or even twenty days before they want to begin to use it. Now from a business point of view, this is a bad policy, because I believe it is the experience of the trade that when coffee is stocked so long roasted it loses its value something like 40 per cent.; hence the necessity for roasting frequently." "Of course, very little expense will be incurred in roasting?" "Comparatively little. A public company roasts 1 cwt. of coffee for 1s."

28lb roaster can be obtained for £4 or £5, so there is not a great expense attached to it." "I believe it has been suggested in certain quarters that the coffee used on the Continent is inferior, as a rule, to that used in England?" "Yes; there is no doubt that the people on the Continent consume inferior growths of coffee as compared with those in England, but when you say that you must take into consideration that Continental people are going out to better advantage the constituents and qualities of the article. For instance, if you get a cup of coffee, say, in Paris, in any other large city, the coffee, as a rule, is roasted, ground, and brewed while you wait. This bears out the argument I mentioned previously that if coffee was dealt with properly and a better result would be achieved. The coffees that are sent to other countries would not take in this country at all." "And on the Continent you can get a good cup of coffee from an inferior article as compared with us in England with a superior article?" "Well, no, that is not exactly what I mean," explained Mr. Dutton. "What I really contend is that we in England, by using that coffee is dearer than tea, use the article more sparingly than do the people on the Continent, the consequence being that we do not get as good a beverage—not that with the same quantity of article we cannot compete with foreigners. As I have said before, the people on the Continent indulge in the best facilities for making a good cup of coffee, and we in England, generally speaking, do not; hence the necessity of purchasing a superior growth of coffee." "English people are too economical in this respect, then?" "Yes, that is what I believe; they use the article too sparingly." "What kind of coffee is in demand on the Continent and America?" "Mainly Santos, African, and Rio growths." "How do you account for the great demand for coffee and chicory?" "Well," said Mr. Dutton, "I firmly believe that pure coffee at the present day is not a poor man's beverage on account of the price, and as a consequence the public prefer to take a mixture of coffee and chicory at a less price. Of course the latter substance is nutritious; in fact I could prefer good chicory to a great deal of Santos, African or Rio coffee."

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.,

SOMETIME AGRICULTURAL CHEMIST IN CROOG, SOUTH INDIA,
TO MESSRS. MATHESON AND CO.)

(Reprinted from *Madras Mail*.)

III.

THE VALUE OF COFFEE MANURES.

I.

EVERY planter and agriculturist accepts the dictum that manures are valuable aids to the cultivation of crops. Sometimes their value is questioned, but this generally happens when the manure used has proved unsuitable to the land, or to the crop, or they may not have been enough applied, or there may have been too much. Coffee supplies will stand 4 cwts. per acre of ammonia sulphate under favourable conditions of weather, but 8 cwts. is too much, it kills them off. Under like conditions 5 tons of cattle manure (first quality) answered well, but 10 tons was almost as bad as 8 cwts. of ammonia sulphate. This shows that even cattle manure must be used with discretion. It is deservedly a favourite; it is like a charge of snipe shot, it covers a wide area and has less chance of missing the mark than such a manure as hindy or oilcake, in which the ammonia preponderates so greatly over the other manurial elements, and sometimes, like a bullet, misses its billet. Theoretically a very poor soil has sufficient materials for a great number of crops, practically it has not; hence the value of manures. There is a general law of the greatest practical

importance to all agriculturists and planters, viz.:—"If a soil be deficient in any one element, no manure is of value on that land which does not supply the deficiency." For instance, in England practice has shown phosphoric acid to be the element required by turnips, and as a rule phosphatic manures produce good results; but if the soil is short of nitrogen or potash, manures supplying only phosphates will be of little or no value. Again, if the soil be short of iron or sulphuric acid, wonderful results may be obtained by the application of iron sulphate in moderate doses; but if there happens to be a large quantity of ferrons salts already in the land the results are nil; or worse, the crop may be killed off. Gypsum in sulphate of lime is often very useful where lime and sulphuric acid are required, as it supplies them cheaply, especially when a superphosphate is used as only the soluble phosphates are paid for. Every agriculturist is familiar with the fact that repeated applications of lime exhaust the land unless they are well backed up by manure. This results from the circumstance that lime renders the nitrogenous matter of the soil more easily assimilable by the plant, the ammonia acts as a powerful stimulant, and the increased energy of the plant enables it to absorb such food as the roots come in contact with it more rapidly. The soil is exhausted when any one of the elements of fertility is reduced in quantity below that necessary to supply the immediate requirements of the plant in an easily assimilable form; there may be plenty of the element in the soil, but so shut up by its combination with silica, etc., that it is not immediately available as plant food. The value of comparative soil analyses which enables us to judge what is necessary to supply the deficiency of the soil, is of primary importance, as we are by them able to render the necessary assistance to the soil, that is, supply a manure that will remedy the defect. To quote Sibson and Dr. Voelcker:—"The infertility of a soil is often explained by an analysis. The soil may be suffering from the want of some material indispensable to the growth of plants, or it may contain something poisonous to plants. In either case chemistry is generally able to enlighten us, and to point out means of remedying the evil. Of a soil whose fertility is impaired we can all pronounce that it wants manuring; but with the assistance of an analysis we may also learn in what substance the soil is deficient, or what kind of manure it wants. With this knowledge we may restore its fertility in the most economical manner." As pointed out in my paper on coffee manures, soil analyses settle many vexed questions of cultivation; they decide the question as to whether the land requires drainage, and whether shade should be thick or thin; but their greatest value to the planter lies in the fact that they enable him to get full manurial value for his money. Having settled what the soil requires, we must next enquire what the plant demands. Unfortunately there is no royal road to this end. Experiments on soils of known composition with different manures, under widely different conditions of climates, soil, etc., are needed to finally settle the question. The cereals and root crops of Britain have been and are the subjects of constant study and experiment. Law and Gilbert's work has done much to solve many abstruse questions, and to place the cultivation in England on a scientific basis, enabling her to compete with the prairie land of America and Australia and the cheap labour of India in the growth of wheat and other crops. Such experiments are much needed in connection with tropical produce; it was the want of such experiments in regard to coffee, tea, cocoa, etc., that led me in my paper on coffee manures to say that "the question of manuring coffee has had little systematic work spent on it compared with the vast interests at stake." Had I said "little systematic experimental work" most people would have agreed with me. I was fully aware of the valuable work done by Messrs. Marshall Ward, Morris, Thwaites, Trimen and others in connection with *Hemileia vastatrix*; the thorough systematic

investigation of that pest is deserving of the highest praise. I consider that the thanks of the whole coffee planting community are due to the beforenamed gentlemen, the Ceylon Planters, Government and the *Ceylon Observer* newspaper for the energy and zeal displayed in their crusade against the pest. The information gained is of inestimable value in guiding future investigations. Hughes' analyses I know and fully appreciate the value of, but I would like to see systematic experiments put in hand to determine what is, to use Ville's words, the "dominant element" required in a manure for coffee, tea, cocoa, and other tropical products. Having found the dominant element we must first supply the deficiency. If any exists, and the probability that it does is great—in the soil, then apply it.

From the view of a plant few soils are complete; a complete soil should grow any and every plant equally well, provided the climate is equally suitable. Any soil can be made complete; it is only a question of £. s. d. With suitable manures you can grow plants in calcined sand. Coffee Arabica can be made to yield a ton per acre; on a small block, say up to 5 acres or so, it pays to spend Rs. 200 to Rs. 300 per acre per annum and pick crops of 10 cwts. to a ton. But when we come to 200 to 1,000 acres or more the labour difficulties are so great that such cultivation is a practical impossibility. An average of 5 cwts. per acre must for coffee under shade, with ordinary work and manure, be considered good except on very poor land—and patches of such exist on every estate. Such crops can be caught in South Coorg; the average crop of one block of estates there has averaged 4 cwts. per acre per annum for the last 10 years, and there are other blocks as good, and individual estates with much higher averages are to be seen throughout the District. There is every prospect of the average being raised, as the labour difficulties are overcome and the general work can be kept well in hand, allowing of steady systematic annual broadcast manuring being carried out at the right time. There is little doubt that it is best to manure every portion of the estate yearly, but under some circumstances, if the labour is sufficient, two manurings would be better for the trees. Last year (1890) South Coorg was no better off for labour than her neighbours; the evil effects were pointed out and the District bestired itself and procured coolies to replace the Canarese. Tamil labour was introduced; coolies were not paid off at the usual time, but retained as long as possible; all the supply pits required for perceptible vacancies were cut in the hot weather; the weeds were kept down, and I had the pleasure of seeing supplying briskly proceeding early in June.

Leaf disease (in Coorg) in hot weather receives a severe check, and I do not think that where the land is well and deeply cultivated and efficiently manured there is much to fear. On well drained lands it will kill off the trees, but there is no denying that it does often seriously affect crops—a tree cannot well exert its energies to produce leaves when bearing crop without dropping some of it. Efficient manures adapted to the necessity of the plant and the deficiencies of the soil are of the greatest assistance. Too much stress as regards manures for coffee has been laid on the composition of the bean, and too little attention devoted to the leaves and prunings. Take Marshall Ward's estimate of twenty-one weeks as the duration of the life of a coffee leaf, the tree must shed all its leaves $2\frac{1}{2}$ times in a year; under shade they remain a little longer, but the trees as a rule certainly renew their leaves at least twice a year.

This loss on a healthy tree is not noticed, as it proceeds all the year round. It is a poor tree of seven years' growth that has not fifteen hundred leaves on it at least at some period of the year; a fair average tree will have over two thousand and a first class one in full leaf as many as three thousand or more. Then there are the prunings. Let practical planters experiment as Mr.

Cameron, of the Botanical Gardens, Bangalore, suggested to me the other day, surrounding a few trees with wire netting, collecting the leaves and prunings weekly or monthly, dry and weighing them, and have them analysed. With other produce the same course could be pursued. In this way it would be seen what demand the plant makes on the soil for available food at different periods of the year. Having decided that a manure is required and what it is to be, the question is how to supply the estate with it at the least cost in the most suitable form. All manures vary greatly in quality.

A merchant guarantees the bones or other manure supplied pure, but the quality of pure bones and other manures of undoubted purity are of very different manurial value. The following analysis show how widely pure bones vary in quality:—

	Macadan.		Sibson.	
	Highest.	Lowest.	Highest.	Lowest.
Phosphates	57.08%	44.72%	48.14%	44.95%
Ammonia	5.23%	3.34%	...	...
Alkaline Salts	85%	32%	1.91%	.63%
	Hughes.		Pringle.	
	Highest.	Lowest.	Highest.	Lowest.
Phosphate	54.03%	39.40%	52.25%	43.77%
Ammonia	4.48%	3.01%	5.09%	3.25%
Alkaline Salts	...	...	2.02%	.50%

Sibson unfortunately does not give the ammonia, and Hughes unfortunately does not give the carbonic acid with alkaline salts which prevents comparison; but on page 107 of his "Ceylon Coffee Soils and Manures" the composition of Indian bone dust is assumed to be

Nitrogen	...	3.5 p. ct. equal to ammonia	4.25
Phosphoric acid	...	2.4 " " phosphates	52.32

Here then in pure bones, or what is sold as such, we have phosphates, i.e., tricalcic phosphates varying from 39.40 per cent. up to 57.08 per cent. and the ammonia from 3.01 per cent. up to 5.23 per cent. The alkaline salts found in bones are generally assumed to be magnesia and soda, but in some samples a notable quantity of potash is found. Whether it is derived from the food of the animal or from accidental mixture with wood ash I am not able to say.

The Agricultural Societies of Great Britain generally fix selling price units for the season and manures are valued on them. For Southern India and Ceylon the units might be fixed by the Planting Associations and the Chamber of Commerce. For the present I will take bones and oilcake as the standards for phosphates and nitrogen. It is necessary in the first place to decide what constitutes a fair marketable quality of bones and hindy in oilcake. In England the manure manufacturers generally buy bones on basis of 48 per cent. phosphates (i.e., tricalcic phosphates) and 4 per cent. ammonia. Numerous analyses show this to be a fair average. In valuing bones the alkaline salts are not considered only the phosphates and ammonia being paid for. Assuming the price per ton for bone flour of that quality to be Rs. 60 at Bangalore, Colombo, or the West Coast, we may estimate the value of other manures in comparison with it. Castor hindy may safely be assumed to contain 6 per cent. of ammonia and cost say Rs. 36 per ton; the ash though very valuable as plant food is not valued as it generally corresponds to the percentage of ammonia. We thus get the value of six tons units of ammonia in oilcake as Rs. 36, or Rs. 6 per unit per ton; that in raw bone flour is worth as much per unit. Deducting the value of four units of ammonia, Rs. 24, from the total price of the flour, we get Rs. 36 as the value of 48 units of phosphates, or three-fourths of a Rupee per unit per ton for phosphates. The home price is about one shilling and nine pence for phosphates and eleven to twelve shillings for ammonia. So that these manures here are cheaper than in England.

As showing the valuable nature of castor cake and of its ash the following analyses may be of interest:—

		Castor Cake
		parts per 100.
Moisture	...	6.71
Oil	...	10.03
* Albuminous Compounds	...	30.29
Mucilage, Gum, &c.	...	19.64
Woody Fibre	...	27.34
Soluble Ash	...	5.16
Insoluble Matter, Sand, &c.	...	.83
		100.00
* Containing Nitrogen	...	5.05
Equal to Ammonia	...	6.13
SOLUBLE ASH ANALYSIS.		
Lime	...	.09
Magnesia	...	.67
Potash	...	1.98
Soda	...	.76
Phosphoric Acid	...	1.21
Sulphuric	...	.24
Chlorine Acid	...	.21

5.16

Analyses of the ash of oilcakes are seldom made, but the proportion of phosphoric acid worked out to phosphates is equal to 2.64 per cent., worth very nearly Rs. 2 per ton, and there is potash 1.98, worth about another Rs. 2. But the Rs. 6 paid for each unit of ammonia covers that.

The following are the generally accepted proportionate values of phosphates and ammonia:—

90% pass through screen.	Phosphates.	Ammonia.
Bones $\frac{1}{8}$ inch mesh	20	132
„ Meals $\frac{1}{16}$ „ „	21	138
„ Flour $\frac{1}{32}$ „ „	22	144
Fish, whole (about the size of sprats)	21	144
„ Meal $\frac{1}{16}$ „ „	22	150
Oilcake $\frac{1}{16}$ „ „	—	144

In England the price of ammonia chiefly depends on the supply of ammonia sulphate: in India most probably on oilcake.

A determination of the nitrogen in it, expressed as ammonia, is all that is required to determine its value, as the consumer knows that, from a manurial point of view, if the cake is rich in nitrogen the percentage to him of valuable ash will be high, and the valueless oil low, and *vice versa*. Carriage is a most important item to most planters, and an oilcake which has over 6 per cent. of ammonia is more valuable proportionately to them on this account than one with less, though both are paid for at the same rate per unit. The buying of oilcake by analyses is the fairest plan both for planters and manufacturers. For instance, suppose two coast firms offer oilcake, one at Rs. 36 with 6 per cent. ammonia and one at Rs. 42 per ton with 7 per cent. delivered on the coast. The up-country planter has, we will say, Rs. 10 per ton to pay for carriage; therefore the prices of the cakes on his estate are respectively Rs. 46 for 6 per cent., or Rs. 7 and 66 cents, or Rs. 7-10-8, while the 7 per cent. cost Rs. 52 per ton, or Rs. 7 and 43 cents., or Rs. 7-6-10. Let us suppose the order to be for 100 tons 6 per cent. or the equivalent in 7 per cent., then the bill stands as follows:—

100 tons 6 per cent. at Rs. 36	...	Rs. 3,600
100 „ carriage at Rs. 10	...	„ 1,000
Cost on the Estate	...	Rs. 4,600

Ammonia supplied 6 tons cost per ton ... Rs. 766

Only 85 tons 14 cwts. 1 qr. of the 7 per cent. are required to supply 6 tons ammonia, therefore the cost is roughly:—

84 tons 14 cwts. 1 qr. at Rs. 42	...	Rs. 3,600
Carriage on the above at Rs. 10	...	„ 857

Rs. 4,457

6 tons ammonia supplied cost per ton ... „ 743

The actual saving by purchasing the equivalent of 7 per cent. instead of 100 tons of 6 per cent. is Rs. 143, a saving not to be despised in these hard times. The most careful and conscientious maker of oilcakes can only guarantee that they shall contain a certain percentage of ammonia; if he supplies more it is only right that he should be paid for it, or he can divide his cakes into classes to suit his customers. On the other hand the consumer has an equal right to ask for the cake he likes best and is prepared to pay for. In some cases where carriage is difficult it would pay the planter to give a Rupee or even two per unit or more for a high class oilcake with 9 or 10 ten per cent. ammonia. White castor cake of this quality can be produced, though Macadan gives the average for castor cake in Great Britain as $5\frac{1}{2}$ per cent. Hughes gives 9.45 per cent. as the highest for white castor, but the sample had 11.57 per cent. of oil in it, which could with advantage to the planter be reduced to 5 per cent. or less.

TEA.

A New Book.

A short time ago we had the pleasure of publishing at length an interesting lecture on tea, delivered in London by Mr. Crole. His promised book has just been published, and we hope to have the pleasure of reviewing it at no distant date. The book is published by Messrs Crosby, Lockwood & Co., London.

Rebulking in London.

For some months past complaints have been growing in number as to the unsatisfactory manner in which the bulking of tea is performed. Garden bulking is yearly growing more unsatisfactory, while London bulking is decidedly a costly operation, and forms an extra charge few planters can afford to bear with equanimity. With the improved appliances and machinery now gradually being adopted in the best bonded warehouses, we fancy the charges will come down considerably, for we have no belief that garden bulking will, or can, ever be conducted in the scrupulously careful manner which such an important operation demands.

The Home Market.

INDIAN TEAS.—With an improved demand and light supplies the market has shown a firmer tendency, says the *Produce World* of the 17th ultimo. The medium grades have been well inquired for, and occasional advances have been established; speaking generally, these teas are more difficult to obtain at former prices, and as the quantity remaining in first hands, especially the Leaf descriptions, is somewhat restricted, present rates will no doubt be sustained. The values of the common sorts remain steady, but the few lots with a good infusion and black Leaf brought improved prices, while the fine and finest descriptions, which are getting into a small compass, are actively competed for at hardening rates. Owing to the many complaints of the irregular out-turn of Indian Tea imported this season, the subject of bulking has been brought more prominently forward than hitherto. As the imports are largely increasing it is necessary that the facilities for properly bulking should be ample, and it is doubtful if this matter has received the consideration it deserves by the importers. The space allotted at the warehouses may or may not be sufficient at the moment to meet the requirements for this purpose, but with a further material addition to the imports it is clear that increased accommodation will be necessary if the

bulking is to be efficiently done, and it rests in a great measure with the owners of the Tea to devise methods that will adequately meet the case. We have repeatedly pointed out that the seat of manufacture, wherever practicable, is the place where the bulking should be done, and there appears no insuperable difficulty in this respect, as several of the larger companies formerly adopted this course with success. It is evident that Teas so packed retain their flavour much better than when turned out here and exposed to variable atmospheric changes—in some cases for several days. To avoid this it will, of course, necessitate the assimilation of the weight of the packages for the purpose of taking an average tare, as is the case with China Tea. The comparative smoothness with which the Indian Tea trade has been conducted in the past is, no doubt, due to the absence of reforms, but the time has arrived, with the largely increased production, when radical changes are required to place the business on a proper footing.

THE UTTER COLLAPSE OF THE CHINA TRADE.

To Indian and Ceylon tea-planters the following letter from the Shanghai correspondent of the *Morning Post* will be good reading. He says:—

The British tea trade with China is rapidly shrinking up. The present season (1896-97), so far from holding out any hope of improvement, exhibits more rapid retrogression than ever. With one solitary exception, every port of shipment exhibits a decrease. The exports to Great Britain from the commencement of the season to the middle of January fell from 43,362,000lb. to 37,336,000lb. The northern, central, and southern districts have all the same tale to repeat of reduced demand. The Hankow and Shanghai shipments, which take the lead in quantity, lost nearly three million pounds as compared with the corresponding period of 1895-96, their aggregate to date having been only 18,410,000lb. against 21,317,000lb. The central districts shipping by Foochow are nearly two million pounds short—12,749,000lb. against 14,676,000lb. The southern districts shipping from Canton and Macao are over one million pounds short—an aggregate to date of 6,177,000lb. against 1,368,000lb. on the corresponding period of last season. So far as concerns our own market these figures only bear out what was already matter of general knowledge. They cause no surprise as some of the other figures do. China was supposed to be finding compensation in America for her losses in Europe, but that turns out to be a fond delusion. This season's shipments to the United States and Canada have fallen off to almost as large an extent as those to Great Britain. They aggregated up to the middle of January 49,755,000lb. or fully three million pounds less than the corresponding aggregate of last year, which was 53,128,000lb. China's final resort is Russia, but here again we encounter a sharp shrinkage—at least in the shipments to Odessa. Their total for the season has so far been only 22,049,000lb.—fully four million pounds less than last year's total of 27,240,000lb. More tea may have gone overland to Siberia, but that is hardly likely in view of the growing diversion of Russian trade from the overland to the sea route.

A CHAMPION OF TEA-DRINKING.

"EITOL," in the following letter reprinted from the *Pall Mall Gazette*, has some interesting remarks on the effects of tea-drinking. His knowledge of the present system of tea manufacture are crude and some decades behind the time, but his citations of authorities in favour of tea are decidedly to the point.

"I think the public have been quite unnecessarily alarmed by certain hysterical individuals with regard to the terrible dangers which lurk in the teapot. As a physician, and especially as a medical officer of health, I have given the subject of tea-drinking a good deal of my attention, and it may be of interest to your readers to give them what I hold to be the best expert opinion on the subject.

"In order to understand anything about the effects of tea on the human economy, it is necessary to know a little about the leaf itself. I think I can compress this into very few words, and will simply premise that it should be clearly understood that the various teas sold under the trade names of Orange Pekoe, Pekoe, Souchong, Congou, &c., are all picked at the same time from the same shrub. The uppermost leaves and buds constitute Pekoe, those a little lower down Souchong, and the bottom leaves constitute the cheapest variety, Congou. The leaves on being picked are allowed to lie in heaps for about twelve hours, when they are dried over charcoal fires. The best tea consists of small unbroken leaves; the cheaper the tea the larger the leaf and the more dust it contains. On analysis tea is found to consist of five things:—

	Parts per 100
Water.....	8
Theine, an alkaloid or active principle.....	2½
Tannin.....	14
Aromatic essential oil.....	½
Vegetable colouring matter and organic salts.....	75

The theine is the constituent of tea which gives it its medicinal value in headache and fatigue. It is a powerful nervous and cardiac stimulant, and to it is attributable the bad effects which excessive tea-drinking produces on the nervous system. The essential oil gives tea its refreshing smell, and acts as a stimulant. The vegetable colouring matters simply colour the infusion, and are of no import, but the tannin is the alleged author of most of the so-called terrors of the teapot. It is only present in any considerable quantity in tea which has been a long time drawing; so if it is an evil, it is one which is attributable rather to the tea maker than the tea itself.

With regard to the effect of the tannin of tea on digestion, Sir William Roberts, M.D., F.R.S., speaks as follows in a lecture recently delivered at Owens College, Manchester:—"A good deal has been said of the injurious effects on gastric digestion of the tannin contained in tea. I question whether the statements made with reference to this matter are worthy of attention. It has been alleged that meat fibre is hardened by tea, and that the coats of the stomach are likely to be injured by this beverage. These views are entirely theoretical. Leather is no doubt a very tough, indigestible substance, but meat is not gelatine, and the coats of the living stomach are not dead membrane. Meat fibre does not, as a matter of fact, harden in tea; on the contrary, it swells nearly as freely in acidulated tea as in simple acidulated water. And the same is true of solution of pure tannin. Its effect on digestion in the stomach is comparatively slight."

"Sir William Roberts goes on to prove by elaborate experiments that tea acts as a distinct retarder of digestion, but declares that in so doing it performs a useful, nay, an essential, duty in our dietary. 'A slow digestion,' he is at pains to point out, 'is quite a different thing from an imperfect digestion; indeed, it has seemed to me that dyspeptics sometimes suffer, not from a too slow, but from a too hurried, digestion.'

"As the result of his experiments, he holds that:—"In the plan of the dietary of the civilised races, arrived at slowly as the result of immense experience, we seem therefore to detect two apparently contradictory aims—namely, on the one hand, to render food by preparation and cooking as digestible as possible, and, on the other hand, to control the rate of digestion by the use of certain accessory articles with food, such as tea. In reality these objects are not contradictory, but co-operative to a beneficial end. For, to express the matter in another way, it may be said that we render food by preparation as capable as possible of being completely exhausted of its nutrient properties; and, on the other hand, to prevent its nutrient matter from being wastefully hurried through the body, we make use of such agents as tea, which abate the speed of digestion."

"This combination of appliances renders our plan of feeding more elastic, more adaptable to variety of individual health and constitution, and to variety of external condition. According to this view the stomach becomes under this influence of tea a storage organ for food—like the crop of birds, the paunch of ruminants, and the dilatible cheek of monkeys, and the use of the herb, instead of being pernicious, is almost an essential to the adult dietary.—Your truly,
EITOL."

DIGESTED TEA NOTES.

III:

MANURING.

My last paper was all about soils. I shall now present Mr. Bamber's ideas, as well as those of others, on how to improve the soil by manuring.

To begin with China and Japan. The Chinese use everything they can get, from conjee-water to the dung of silk-worms. In Japan fish manure is very largely used. It were more or less waste of time to dwell on the methods employed in these two countries, as it is very certain they are, like their system of manufacture, very much behind the times.

Green-manuring in tea does not seem hopeful. Mustard can be sown easily enough, but must be left two to three months undisturbed in pruning time. What result this would have on the tea is difficult to foresee. The Black Mustard is the best, 16 lb. per acre suffices. Sulphate of lime, 5 to 10 cwt. and powdered saltpetre, 2 cwt. per acre would be beneficial if applied as a top-dressing when the mustard was 2 inches high.

Another method, not touched on by Mr. Bamber, is that of growing belts of leguminous trees or shrubs as wind-breaks, and applying their loppings to the neighbouring plants. This method seems to assure greater success than annual sowings of mustard, etc., especially if the plant chosen could be used as fuel for the factory. A sort of universal cure would it become: a manure plant, a fuel tree, and a wind-break! The actual value of the loppings from leguminous trees is too well-known to my readers to need any explanation.

There is a very general impression in Upper India (excepting Kangra and Darjeeling) that it will never pay to manure tea. From two reasons. First, that rich soils don't want any; secondly, that poor soils will only exhaust themselves if any appreciable quantity of manure is applied. Latter is rather too absurd to argue over.

It may be taken as an axiom that if cattle manure is intelligently used, an application every two to three years is ample. But if artificials or chemicals are used, a yearly dose is a matter of practical necessity. Further, that inasmuch as all but the poorest of tea-soils contain an abundance of minerals, nitrogen is practically the only element worth troubling about. And, generally speaking, a good class fish-manure is the cheapest form to apply it, especially if one remembers that fish contains certain valuable minerals never found in poonacs. Chemicals are generally more expensive than poonacs, *i.e.*, with regard to the unit of nitrogen.

Before touching on the experiments detailed in Mr. Bamber's book, it will be as well to mention the results now obtained in Ceylon. A very favourite dose is four ounces of poonac and bone mixture (4 to 1 mixture) per tree. The increase of yield is between 50 to 100 %. Manuring is as yet confined to old coffee-land tea and young tea opened on poor land. The financial results are excellent.

The Assam experiments were made with much larger doses of manure, as much as over one ton per acre of poonac being applied at a time.

Cotton seed was tried in Chittagong some years ago @ 2 and 3 lb. per bush. Former gave an increase of 23 % and latter 50 % in yield over that obtained from the unmanured plot. To destroy the vitality of the seed it was heaped in 50 or 100 maund stacks, moistened with cold or hot water and covered over with clods of earth. It took from 5 to 8 days to accomplish this object.

Superphosphate applied at the rate of 720 lb. per acre on Seleng garden yielded an increase of 25 % in yield, and compared

most favourably especially in light soil with those plots treated with nitrogenous manure. Superphosphate on heavy soil showed no appreciable change.

The whole series of experiments points the same moral: chemical manures, be they mineral or nitrogenous, act far better in light than on heavy soils.

All manuring should be preferably given to heavily pruned bushes, as it is at that period that the plants most require assistance to overcome the effects of the severe treatment. It will also be found that the plants will form sound straight wood from near the ground, which will afford material to prune upon for several years to come, and none of the effects of the manure will be wasted.

Curiously enough, Mr. Bamber, after having given minute details of certain trials in experimental manuring, then turns his attention to the theoretical branch of the subject and discourses learnedly thereon. A few brief remarks should not be unacceptable.

It is well, before attempting manuring experiments, to know the chief needs of the plant in question. Tea is extremely rich in nitrogen, containing in its dry state 5 % to 6 % or much the same as poonac. So that if any decided increase of yield is wanted, a nitrogenous manure is of the first importance, though in light soils soluble minerals (especially phosphates) have been already shown to be extremely valuable.

The chief nitrogenous manures are: oil cakes, guanos, salts of ammonia, nitric acid, cattle manure, and some rich peaty soils. Good rich peaty bheel (swamp) soils are the best of all tea manures, the effects being fairly quick and of very long duration. The expense, however, is considerable per application, though not so in point of fact.

The most important minerals removed by the tea leaf and prunings are as follows:

Phosphoric Acid	...23.35 per cent. of the ash.
Potash	...24.61 "
Lime	...15.05 "

Tea made from Hybrid leaf contains 6.62 % of ash, while that from China leaf is 6.35 %. The chief minerals are present in this ash to the extent of:

	Hybrid.	China.
Phosphoric acid	...20.79	20.31
Potash	...38.00	38.64
Lime	...8.51	7.31

Roughly speaking every maund (80 lb.) of tea takes away as much potash as is contained in 9 pounds of sulphate of potash, and as much phosphoric acid as is present in 4½ lb. of bones.

It is just as well to get familiar with the average composition of artificial and other manures, always bearing in mind that a very slight difference in the analysis may make a very great difference in the manure bill of an average estate.

	Nitrogen.	Phosphoric Acid.
Margose Cake	... 5.25	1 ———
Castor Cake	... 6.66	1 ———
Ground Nut	... 5.75	1 ———
Fish Manure	... 7.00	8.50
Bat Guano	... 10.00	6.00
Cotton Seed Cake Decorticated...	7.50	considerable.

Fish manure usually contains a large percentage of sand, but this is wholly due to careless manufacture. The utmost it should contain is 5 %, and an allowance should be made on any that exceeds this amount.

Bheel Soil.

Cost of application varies from 35f. to 90f. per acre, according to distance, average depth of dressing 6 inches. The value varies very greatly and an analysis should be invariably obtained before using it.

	Rich Cachar Bheel Soil.	Ordinary Assam Bheel.
Calculated on the dry soil ...	%	%
* Organic matter and combined water ...	34.29	14.74
Phosphoric acid ...	.50	.07
Potash ...	.56	.81
Lime ...	.07	trace.
* Containing Nitrogen equal to Ammonia...	1.19	.694

Either soil compares very favourably with ordinary cattle manure, but it must always be remembered that the effects, while being vastly more permanent, are not so immediate. Two or three points should be borne in mind in swamp-soiling:

Let it dry thoroughly before application, as the water otherwise increases the expense of transport enormously.

Always swamp-soil in the dry weather, as the poisonous acids get dissipated before they have time to be carried down to the roots.

Lastly always apply as a surface dressing, and never put in pits or trenches

A six inch dressing is equivalent to about 340 tons of *wet* soil, or 120 tons of *dry* soil per acre.

The actual quantities of manurial constituents supplied by a 6 inch dressing are enormous, equalling that contained in 6 tons of sulphate of ammonia, $1\frac{1}{2}$ tons of sulphate of potash and $2\frac{1}{2}$ tons of bone: say a total money value of R. 1500. As the application comes to under R. 100 per acre, the manurial wealth contained in a neighbouring swamp of good quality may be guessed at. A cubic foot of dry soil weighs about 12 lbs. Twelve tons of good swamp soil are equal in manurial value to one ton of ordinary poonac.

Cattle Manure.

Ten to twenty tons per acre every two years is probably the smallest amount worth applying, or say $\frac{1}{5}$ th to $\frac{1}{2}$ bushel per tree. The analysis of cattle manure differs so greatly that it must suffice to say that a very fair sample of plantation manure does not run higher than $\frac{1}{2}$ per cent. of nitrogen. It is a very great mistake to think that abundance of litter lessens the value of the manure. The percentage of constituents remains very much the same, while the actual quantity is much increased. It is always best to apply cattle manure as *fresh as possible*, especially on soils poor in humus. It is best hoed in. Sulphate of lime or Kainit freely scattered over the manure does much to preserve the otherwise inevitable loss of nitrogen consequent on storage.

Bones.

Properly steamed bone undergoes decomposition very rapidly, usually in the first year. On fine sandy soils it is more advisable to apply coarser grades to prolong their action. A grade varying from dust to particles $\frac{1}{2}$ inch in diameter is generally most suitable: the dust being taken up at once while the large particles decompose more slowly. Good bone meal usually contains about 50 per cent. of phosphate of lime and 4 per cent. of ammonia if "raw" and $1\frac{1}{2}$ per cent. if steamed.

The cheapest way of obtaining bone manure is to buy the whole bones, and either convert them into bone black, or stack them in heaps until decomposed. If the heaps are moistened occasionally with cattle urine, and covered up with a layer of soil, the process will be usually complete within a few weeks. They will then become much softer and may be easily broken up before application. From 3 to 10 cwts. per acre may be tried with success, larger applications showing no profit. Bone black contains about 69.75 per cent. of phosphate of lime, and may be obtained cheaply from sugar factories, or obtained from the raw bone by burning. The action is decidedly slow. Decomposition may be greatly hastened if applied in conjunction with fermenting vegetable manures.

The process of converting bone-dust into superphosphate is simple. Procure a wooden trough or box coated with pitch to prevent the sulphuric acid destroying the wood. Of which acid, 32% and of brown 41%, of the weight of the bone dust

is required. Place a layer of fine bone dust in the trough. Fill up with coarser fragments of 1 inch in diameter nearly to top. Pour in the acid so as to thoroughly moisten all the bones. Stir occasionally, and let it remain for some hours. The gases given off are poisonous. Then remove the mixture, and add if necessary some fine bone dust to dry up any excess of acid. In one or two months, powder it up and apply to the bushes at the rate of 5 to 7 cwts. per acre. The effect is generally rapid, and the bushes improve in appearance and yield.

The great danger in using superphosphates is that unless the soluble phosphoric acid is at once taken up, it will be reconverted into insoluble basic phosphates.

Basic slag is another phosphatic manure, and one that should be invariably purchased on analysis. Much depends on the fitness of the particles, of which at least 80 to 90 per cent. should pass through a sieve of 10,000 meshes per square inch. A portion of the phosphates is in a readily available form, and more soluble than that in ordinary bones.

Of guanos there are two principal kinds, nitrogenous and phosphatic guanos. They should be invariably purchased on analysis.

Wood ashes again vary greatly in quality. They should never be allowed to be exposed to the action of rain, as the soluble minerals are thereby almost entirely washed out. Ashes increase the outturn if applied in large quantities of 5 to 7 cwts per acre, especially if combined with nitrogenous manure. A fair sample may contain 16% Phosph. acid, 25% Potash and 10% Lime.

Sulphate of potash contains only potash (e.g. as regards manurial value) and is of no particular use to see wood ash is generally far more valuable.

Saltpetre or nitrate of potash is essentially different to the sulphate. It contains a very high percentage of nitrogen and is markedly stimulative when applied at the rate of 2 cwt per acre.

Nitrate of soda should also, for the same reason, be valuable as a tea manure.

Sulphate of ammonia is of much the same class.

Sulphate of iron has also been tried in small doses, but with no appreciable results. Great care should be exercised in its use.

Sulphate of lime is valuable chiefly on account of its solven effects on the insoluble plant food in the soil. It must be borne in mind that the best effects of lime are only shown when applied to soils rich in vegetable matter. When applied to soils poor in humus, the visible effect is very small, notwithstanding the fact that the soils may contain only a trace of lime. Applied as quicklime its effects on stiff clay soil are very marked. Lime does not seem to be a necessary ingredient of tea-soil, as, in its absence, magnesia is largely able to take its place. The chief value of lime lies in its mechanical action. Applied to heavy soils, it should be in the form of quicklime and must be hoed in at once, so that its expansive powers in the process of slaking should take place entirely in the soil. On light soils it is best given with composts of decayed jungle or other refuse material, the decay of which it greatly promotes. This compost, enriched with the wood ash from the factory and lines, would produce a manure little inferior to that from the ordinary grass-fed cattle.

(To be continued)

DISTRICT ASSOCIATIONS.

SHEVAROYS.

PROCEEDINGS of the monthly committee meeting, held by the kindness of Honorary Secretary, Y. T. C., in the Tennis Pavilion, Yercaud, on Monday, April 19th, 1897, at 10 A.M., when there were

present: Messrs. J. C. Large, C. Rahm, Junr., E. H. King-Harman, G. Lechler (*Chairman*), H. W. Leeming (*Honorary Secretary*), Gompertz, and Mr. W. J. Lechler, by invitation.

1. Notice calling the Meeting was taken as read.

2. Read letter, dated 26-3-97, from Mr. W. J. Lechler *re* the instruction of a short length of Road between Ajampatti and Allipatti Villages to connect the Estates on the North of the Shevaroy with Mallapuram Railway Station.

Resolved "that, pending the decision of the Salem District Board, this matter lie over for future consideration."

3. Read letter, dated 11-3-97 (postponed from last Meeting), from Mr. Large requesting that a reward from the Association "Police Reward Fund" should be granted to Head Constable No. 492.

Resolved "that a sum of Rs. 5 be awarded, through the District Superintendent of Police, to Head Constable, No. 492, Jalal Khan, for a conviction in connection with a coffee theft case on Cascades estate."

4. Read and recorded, for future reference, G. O. No. 656, L. Mis., dated 3-4-97, *re* the "Shevaroy Road Fund."

5. Read and recorded correspondence *re* Case No. 343 of 1896, in the Court of the 2nd Class Magistrate at Yercaud.

6. The following Papers were laid on the table:—i. "Planting Opinion" for April 3rd and April 17th, 1897. ii. "Agricultural Ledger," Nos. 3, 35, 39, 40 & 41 of 1896. iii. "Commercial Circular," Nos. 1 & 2 of 1897. iv. Proceedings of the Annual General Meeting of the South Mysore Planters' Association.

Proceedings of a General Meeting of the Wynad Planters' Association.

" of the Quarterly General Meeting of the Coorg Planters' Association.

" of the Annual General Meeting of the North Mysore Planters' Association.

With a vote of thanks to the Chair, the Meeting terminated.

C. G. LECHLER, *Chairman*.

H. W. LEEMING, *Honorary Secretary*.

CENTRAL TRAVANCORE.

A GENERAL MEETING of this Association was held in the Church Bungalow on Saturday, the 24th ultimo, when there were present: Messrs. F. M. Parker (*Chairman*); L. W. Baker, H. J. Blandford, R. H. Goldie, L. W. Crawhall, H. S. Holder, R. S. Imray, C. Lance, G. MacGowan, L. M. Knight, the Rev. Father P. Segretain, D. Tolle-mache, the Hon'ble V. B. Wilbraham, C. H. Williams, and G. L. Acworth (*Hon. Sec.*) Also as visitors: Messrs. A. Nicholson (the British Resident), H. G. Arnold, and J. B. Nicholson.

The Chairman, in opening the proceedings, said:—

GENTLEMEN,

As I was unable to be present at the last general meeting, owing to certain sad circumstances to which I need not further allude, I must take this opportunity of thanking you for the honour you have done me in electing me your Chairman. As to my qualifications for the office, it is for you, not for me, to judge. I only know of one, and I am not sure that that is one to be proud of.

I am one of the few members now left among us who assisted at the birth of the Association, who nursed it through its early troubles, and who have seen it develop into strong and healthy manhood. Gentlemen, it is with great pleasure that we welcome here to-day the presence of the British Resident. We are deeply grateful to him for taking so kindly an interest in our proceedings, and if occasion arose, we fully realize the benefit we should derive from the counsel and guidance of the British Resident. It is of great advantage to us that during his visits to these hills the Resident becomes personally acquainted with us as planters, and from his knowledge of us and our district, can see for himself, whether any little grievances we may happen to have are legitimate or not. We do not demand large consti-

tutional reforms like the gentlemen in the Transvaal. We only ask for comparatively small favours, such, for instance, that a first-class magistrate may be always with us, and that our roads may be kept in decent order.

The minutes of the last meeting having been taken as read, the Honorary Secretary gave the following précis of the more important correspondence that had taken place since the last meeting:—

Land Sales.—The Dewan had promised that in all future notices of land sales in the Gazette, the actual reserve price should be published, and it would not therefore be necessary for applicants to proceed to Trivandrum to bid, unless they thought the price sufficiently moderate.

Local Fund, Madura.—The President of the Board had informed the Honorary Secretary that nothing could be done to the bridge spanning the outflow of water from the Periyar lake on the Goodaloor ghaut road until the sluices were shut. The moment it was possible to close the sluices, the work would be taken in hand.

Government Buildings.—The Dewan had requested the Chief Engineer to select a site more suitable to the altered condition of the district and to submit estimates for the removal of the buildings thereto.

Title-deeds for Land bought in October 1895.—The Honorary Secretary, having brought to the notice of the Dewan the great inconvenience caused to the purchasers by the delay in issuing these deeds, had been promised that they should have immediate attention.

It was, however, much to be regretted that the survey officer having been removed from the district, considerable further delay was likely to occur.

Application for Free Grant of Periyar Land.—At the request of several members, the Honorary Secretary had, through the first-class magistrate, protested against any free grant of this land for experimental cultivation, as it was now becoming scarce and valuable.

Tea Thefts.—A long correspondence on this subject had passed between the Honorary Secretary and Messrs. Aspinwall and Co., and owing to the precautions taken by those gentlemen on the one side, and members of the Association on the other, these thefts had for the present stopped.

The meeting then proceeded to the business on the agenda paper.

Indian American Tea Fund.—It was unanimously agreed that the Association would again support the fund, and that a tax on all estates should be levied at the rate of four annas per acre and half an anna per maund of tea made.

U. P. A. Address to the Queen-Empress.—Read and approved.

Telegraph Subsidy.—The Honorary Secretary was requested to write to the Director-General of Telegraphs and ask him to be good enough to allow half-yearly statements of the accounts of the local office to be furnished to the Association, as members were unable to understand how, with the increasing business of the office, so large a sum had to be paid by them to cover the guarantee.

Roadway Widths.—The correspondence between the Dewan and the Chief Engineer and the Honorary Secretary was read, and the agreement come to between the Chief Engineer and the Honorary Secretary, the latter being instructed by the Committee, was endorsed by the meeting.

Withdrawal of First-class Magistrate from District.—Proposed by Mr. Parker, seconded by Mr. Imray, that in the event of the first-class magistrate being transferred elsewhere, H.H. the Maharajah's Government be respectfully requested to appoint another resident first-class magistrate as speedily as possible.

Labour Contracts.—In drawing attention to this subject, Mr. Veale said:—

MR. CHAIRMAN AND GENTLEMEN,

It is now close on three years ago that this Association passed a resolution with a view to the registration of canganis and maistries employed in the district, but as it was impossible to find a competent native to act as registrar, the scheme was allowed to drop. Whether the scheme, if carried out, would have proved as effective as was at the time expected, I think there is some doubt, more especially in

respect to canganis, but with respect to maistries of skilled labour, such as sawyers, carpenters and the like, some such scheme is as necessary now as it was then, if not more so, to protect ourselves from the indiscriminate manner in which these men take advances from several estates. Only recently a case of this sort has happened to me. A sawyer who had been working for about four months for me wished to go down to the plains; I settled his account and, on his agreeing to return to the estate in 15 days, I gave him another advance in Cottayam. He returned to the estate in the allotted time, but only remained three or four days.

After several weeks I heard that he was working on Glen Mary. I first of all wrote to Mr. Laurie asking him to send the man back, and next day I went over to see Mr. Laurie, hoping that we might arrive at some mutual arrangement whereby we should each get some work out of the sawyer and a fair chance of recovering our respective advances. But I regret to say Mr. Laurie did not see the force of my arguments and declined to meet me. Nothing, therefore, was left me but to prosecute for breach of contract, which I did; the man was convicted and ordered to fulfil his contract within 30 days. The magistrate at the same time gave him a letter to Mr. Laurie, informing him that the man had been convicted and requesting him to allow the man to leave Glen Mary, but, needless to say, the sawyer has never been near the estate since, and I have every reason to believe the man is working still at Glen Mary.

I now find that I can only get that man punished for contempt of court. My advance is quite irrecoverable, which is certainly hard lines, but the defective nature of the laws of the country are responsible for that. I think we are all agreed that this indiscriminate taking of advances by sawyers, carpenters, and the like is not conducive to our best interests, and if we are unable to obtain any aid from Government, such as the framing of new laws, we must, if we wish to put a stop to it, combine together to help ourselves, but we must be entirely unanimous if we wish to do any good.

Do not suppose for a minute that I am blaming Mr. Laurie in any way, for I am sure he was quite in ignorance that the sawyer was under advance to me, but if the position had been reversed, I cannot help thinking Mr. Laurie might have taken a different view. But I would suggest one of two things—either that we again make an attempt to start the registration, not of canganis, but maistries of skilled labour only, and that we try it for a year to see how it will work. If no competent native can be found to undertake the work of registrar, let one of us try; if no other gentleman will make the attempt, I will, at any rate for a time, or let a sub-committee be appointed to frame rules, by which we shall all agree to abide, to meet such cases as the one I have quoted. For instance, let one rule be something of this kind: if a maistry take an advance from one estate while still in debt to another, that the manager of the estate who gives the second advance shall immediately compel the maistry to return to the estate which originally advanced him, unless the manager of that estate prefers that he should take over the amount of the debt.

The Association sympathised with Mr. Veale in this particular instance, but it was generally felt that the unwritten law was so well known, and was as a rule so cordially carried out, that legislation on the lines suggested by Mr. Veale was unnecessary.

Medical Fund.—The Honorary Secretary informed the meeting that the Committee, having gone into figures, found to its regret that it would be necessary to levy a tax of Rs. 2 per acre to support the establishment. It was hoped that, when the returns of out-patients at the various dispensaries were sent in, the Government would assist the Association with a grant for each hospital and dispensary. In the meantime it was hoped that members would be willing to pay the tax for the first six months. After some protestation this was agreed to, but it was felt the work could not be continued for any length of time without Government aid, and the heads of the various dispensaries

were urged to keep an accurate record of their daily patients.

A very cordial vote of thanks to Mr. Veale for the time and trouble he had spent in working out the scheme was passed.

Before the meeting closed, the British Resident said that he must thank the members for having invited him to attend, and that he was very pleased at having been able to do so, for it was a very great advantage to meet the planters and to hear from their own lips what their needs and necessities were. They performed a public benefit in opening up the country and turning waste lands into productive gardens, but in doing this work little differences were sure to occur between themselves and the authorities. It was an advantage to him to hear personally what the differences were, and so far as lay in his power, he would do his best to smooth them over. As regards the first-class magistrate, he might mention that he had some conversation with the Dewan on the subject, and had been assured that an officer would be appointed as speedily as possible.

With respect to roads, he certainly thought they were not what they might be, but the Chief Engineer would be up in a few days, and when once here, he had no doubt the Association would know how to deal with him.

He believed that thefts of 'planters' produce occurred everywhere, even more in the coffee than in the tea districts. In the former they had the marvellous fact, that oftentimes the proprietor of a half-acre garden would export two or three tons, a happy result that no European proprietor has yet been able to attain. He understood that the thefts on the roads occurred chiefly near Pambadie, and it would be well to talk to Mr. Bensley and see whether a pettah for carts could not be established there.

It only remained for him to congratulate the Association on the wonderful public spirit they displayed in dealing with the medical aid—a spirit very different to what he had seen in some other districts. He would conclude by once more thanking the meeting for inviting him to attend.

The meeting then adjourned.

SHORT STORY.

A TALE OF FAIR KASHMIR.

It so happened that some five years ago I found myself in Murree in April with my friend, and hearing the people at the hotel talk of going on into Kashmir, we felt we might as well go too; accordingly after we had got tents, ponies, stores ready, we started and marched in, taking seven or eight days to reach there.

The tonga road was not built then, and we had to follow the old bridle-path, sometimes so high up that we could only just hear a murmur of the river below, sometimes so low down that we had to shout to make ourselves heard above the roar of the stream.

The first four marches are not very interesting, but after we had passed Gharri, the scenery became wilder and wilder, the snow lay thicker on the upper hills, and it was generally colder, and the leaves were only just beginning to come. On the eighth day of our march we reached Barramoola at

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rance of the valley, and there the Jhelum, which had all along a rushing, roaring, snow-fed torrent, widened out into a broad, slow, flowing muddy river. As we neared the little town, we were met by a crowd of dirty and eager boatmen and shikaris, each armed with a sheaf of chits, who clamoured for employment. A Kashmiri's most treasured possession in life is a bundle of chits, and when he dies, they say, they are buried with him, to enable him to obtain good employment in a future life.

We engaged a boat each for ourselves and a smaller one for our servants; our boats were pointed both ends, some 60 feet long and 8 feet wide, with mat walls and peaked mat roof. We occupied the front part of the boats, and the boatmen, with their wives and families, the back parts.

The cook boat was of a similar shape, but smaller; on it we put our tents and servants. These boats are called doongas; we also had a small boat called a shikara, that seated two or three passengers and five paddles; they are of the same shape but have no walls and only a light top, and are about 18 feet long.

I had also engaged a shikari, who had been highly recommended to me; I sent him on ahead to a place called Rampore, about 7 miles above Kunos, on the Woolar Lake, where I hoped to find bear.

We started that evening and tied up for the night at a little village called Kamsapura, about two miles upstream, by which we avoided the noise and dirt of Barramoola.

Next morning we were up at 7 A.M. to find a bright sun and blue sky, and got a most glorious view of Nanga Parba (17,000) showing to the north of the Nag Merg Hills. Then we went to breakfast and suddenly found we had started. They had cast the boat off and got out a tow rope whilst we were sitting down, and now we were shipping upstream so quietly that we should not have known we were moving but for the ripple of the water at the bows of the boat and the constantly changing scenery.

That afternoon we reached Sopur, and watched a sahib fishing under the bridge for a bit; he said "he had fished all day and caught nothing" like the men in the Bible, but the words were hardly out of his mouth when his rod was nearly pulled out of his hands and the line was tearing off his reel; farther and farther went the fish, till he had hardly any line left, then he managed to recover some of it, when off it went again; I shouted to him to untie his boat and follow the fish, which he did and soon got on to better terms with it, and finally landed it opposite the Hindoo temple after a 30 minutes' fight—a good fish (mahseer) of 23 lbs.

It was getting late in the evening, but we went on upstream at the deepening twilight towards hoary old Hari Monk (17,500) with his snows all aflame in the rays of the setting sun long after the valley was in shadow. We tied up for the night at Ningel, where the Jhelum leaves the Woolar Lake, and heard from a man who was camped there that there were a good many ducks in, and that the slow straight stretch of river in front of us was a great place for mahseer and chirroo fishing in July and August. He told us also that the mosquitoes at Ningel are a pest and so big that one day a new chum went out with a gun and shot three or four and when he came back asked if they were not vampires. Seeing we doubted his veracity, he owned that the story sounded unlikely, but he would tell us what happened to himself, which was quite true and which he would vouch for. I felt sorry for him, as I felt sure after this preface he was going to prepare himself pretty badly. He said, "I was fishing for mahseer, which run up to 10 lbs. here, and the mosquitoes were awful; they were so bad that one day when I was having a bath they lifted up the flap of my tent; I saw them coming and bolted under the flap, rubber bath-tub, which I turned upside down over me;

but they had seen me and tried to get at me through it. I let them get their trunks well into the rubber and then clapped my hands, hoping that they would fly up and break off their trunks in the bath, but not a bit of it; there was a whirr of wings and they actually carried off my india-rubber tub. I use a tin one now." We said good night hurriedly, lest he should tell us another lie and strain himself, and went to bed to dream of mahseer and mosquitoes.

As a matter of fact in fishing at Ningel in July, August and September you have to wear gloves and tie your coat sleeves, tuck your trousers into your boots and wear a bag of mosquito-netting that goes over the hat and under the coat collar; if you do not take these simple precautions, you lose about $\frac{1}{2}$ lb. of blood a day.

Next morning when we woke up we were out in the middle of the Woolar Lake. I was having a plain soda to get the taste of the mosquitoes out of my mouth when I heard a girl's voice in evident distress. I went to the front of the boat to see where the sound came from and saw a small boat with one man, an old woman and a girl sitting in it and two mangies (boatmen) paddling. The man was leering at the girl and the old woman was counting over some money and laughing, whilst the girl was sobbing bitterly; however, when she saw me she pulled off her veil and called to me to save her in broken Hindustani. I jumped into my small shikar boat with my gun in my hand, and with three boatmen to paddle me soon caught them up. She was a Punditani who had been stolen from her home by the man, who was a Mussulman Zemindar. As soon as she saw me coming she had covered her face again, but I suppose she saw that her good looks had impressed me enough to enlist me on her side, and she was good looking.

The Zemindar blustered a bit, but I threatened to send him to Srinagar in care of the police on the charge of abducting a Hindoo woman, and he climbed down and tried to be off, so I told the girl to get into my boat and the man to clear, which he did promptly, the best frightened man in Kashmir, for it would have been bad enough if a Hindoo man had run off with a Mussulman girl, but here a man of the lower class had run away with a girl of the ruling caste.

When I got back, my pal laughed at me and called me Don Quixote and other sorts of a fool, and asked me if I meant to marry my captive, but I told them "No," I intended to take her back to her parents. "But do you know who her people are, or where they live?" I said "No, but I can easily find out. We will have a week at the bears first and then I shall run up to Srinagar and hand her over to her people. In the meantime I'll have to get a Hindoo woman of her own caste to look after her and cook for her, for she evidently is accustomed to be waited on." He laughed at me, and asked her what she thought of the idea. But she only laughed back and said the Burrah Sahib was good and kind and would no doubt do what was right. We got to the edge of the lake at Kunos that evening and met my shikari with good khubber of bear, and the ponies which had marched across from Barramoola, but he decided not to start till the morning as it was seven miles uphill and a bad road, so we had the tents put up, and I gave up mine to my protégé who was named Chota Begum, and I luckily found an old Hindoo woman of her own caste in the village whom I paid to attend to her, for she was a dainty little lady, with eyes like a gazelle's and cheeks like the almond blossom and lips like cherries. When only my friend and I and her old attendant were present she would uncover her face, but muffled herself up if any one else appeared. She told me that her father was a wealthy pundit in Srinagar, and that he had some business connection with the man who had stolen her. This man was a Mahomedan Zemindar called Karim Malik, and on one of his

visits to Srinagar had seen Chota Begum accidentally unveiled for a moment and became enamoured of her and had sworn to carry her off. He had bribed her attendants, and as she was coming back from the temple one evening she had been sopped by him, gagged and bound and carried off down the river and had no chance to call for help till she saw our boats, and that was all she could tell us.

Next morning we broke camp and marched up to Rampore, and I noticed that my friend X. was very attentive to Begum, walking beside her pony, and paying her clumsy compliments in bad Hindoostani. However, I thought nothing of it till that evening; when the tents were pitched and we were settling down for the night I heard a scream, and running towards the sound, I found my companion trying to steal a kiss from my friend; she wrenched herself free, and ran over to me saying she did not mean anybody else to kiss her but me. I told her not to be frightened, and my friend that he was a brute. High words ensued, and he went off to his tent in a rage. I was sorry yet relieved, as the little woman had possessed herself of my hunting knife, and said she'd stab him if he came back, for she had a temper of her own.

Next morning my friend apologised, and we beat for bear. Chota Begum insisted on coming with me, although I tried to persuade her to stay in camp, but she would not stop away, and it was a good thing for me that she did come, as you shall see.

We tossed for places and I won the toss; so we took up our positions at the top of a shallow nullah with a good many wild apple and pear and walnut trees in it, X. and his gun-bearer on my left, Chota Begum, my gun-bearer, and I on the other side. The nullah was a long one, and looking down we could see the lake and river and plain lying below and blinking in the sunshine. At first, the sound of the beating was faint enough, but it got louder as the beaters approached. First the pigeons began rocketing overhead, flying fast and making no sound. Then a covey of chikor slipped past like grey shadows, all going hard and silently. An old red fox gallops up to within 20 yards and waits listening with his head on one side and his flanks heaving and then trots on his way in blissful ignorance of our whereabouts. It is getting intensely exciting as we try and make out what the beaters are saying. In the dead silence that comes with a pause of the shouting we hear a couple of red monkeys chattering, and that mostly means large game afoot. The sound of the beaters is loud enough now, and I can make out the call of Balu! Balu! and then a blood-curdling yell follows, enough to wake every bear for miles round. Suddenly down below and rather to my right I hear the bushes crackling and Chota Begum touches my arm and silently points in the same direction. I can see the tops of the hazel bushes waving; then the scrub parts and with a ugh! ugh!! out roll two bears below me and to my right. I have a small trench about 4 feet deep and 5 wide cut by the rain which is between us and runs downhill, and from my right to my left, all the rest is short grass and scrub for 50 yards. One is a real big one, the other is smaller. Bang! Bang!! twice clean at 40 yards, and it turns back and disappears in the scrub; scrub won't do! I then let drive at the smaller one; he pitches over into some bushes, and as he does not come out again, I hope he is dead. I found him afterwards shot through the heart; he had dropped dead in his tracks. Then I hear four shots from X. on my left and then silence again but for the yelling of the beaters. Suddenly Chota Begum catches my arm and calls "Sahib, look out; here's the big bear back again;" so it was and meaning business too. The gun-bearer and I had been looking downhill and to the left, and the big bear that I had missed at first had come on again, this time very savage. She had got up on my right hand and was rather above us, and charging for all he or

rather she was worth; but for the little trench I should hardly have had time, but I gave it the first shot as it was on the opposite edge and it pitched forward into the hollow badly hit and then I gave but two more shots before she had time to scramble out, and there she lay dead at my feet almost. Then I saw another but could not get a shot at it and it crossed to X., who missed it. Then another came past me which I hit but which went on and I failed to bag. The place seemed alive with bears, but that was the last and the coolies were only 3 yards off now. So I held up a stick with a handkerchief at the end to stop the beat and called up the coolies and have our spoils carried up to where the tiffin basket was waiting under an old apple tree. I had got two bears, one big one and one about three years old. X. had killed one about the size of my smaller one and missed another. There had been six or seven bears in the beat, for another big one was there which did not come up to us but broke back through the beaters, slightly clawing one of them. After tiffin we left three or four men to skin the bears and take the heads and skins back to camp. We had two more beats, but only saw one more bear, and did not get that and got back to camp very fairly satisfied. About 4-30 P.M. we got back to camp. We had seen no red bears, only black ones but the coats were very good. Next day we did not do much. X. went and got some partridge, and Chota Begum picked some mushrooms. Whilst I stuck to the camp I saw the skin pegged out and scraped, wrote letters and shot a few pigeons so you see we fared sumptuously. X. had by this decided to go and try for ibex whilst I was content to stick to bear till I was a better climber, and also Chota Begum would now be able to stand the rough work of marching to Ibex and Markhor ground. X. went off next morning, but I stopped on another week, and got another bear and then announced my intention of going up to Srinagar and handing "my lady" over to her father.

This plan was met with violent opposition. The Begum was dead against it. She upbraided me. She wept, she said that she had always been unhappy at home since her mother had died and her father had married again. Then when she found that I would not listen to her reproaches, she changed her tactics and putting her arm round my neck she tried coaxing this would not do either I felt; so I put on my sternest air and told her not to be foolish; she got rather frightened at this and wept again, but when she saw an unlucky smile that I could not quite repress she began coaxing. That evening we were on board, and by eight next morning we had crossed the lake and were in the river; we went on upstream and reached a place called Sumbal that night. The Gilgit-Srinagar road crosses the river here by a wooden bridge, and there is a capital camping ground where I put up a tent for Begum. Next day we went on and stopped for breakfast at Shadipore and reached Srinagar about 5-30 P.M. I sent up to the city to Begum's father, and when he came told him the whole story. He was a handsome old man with a sweeping white beard. He was furious with Karim Malki, but unfeignedly glad to get his daughter back, and thanked me very much for bringing her to him again. Then I dismissed him and turned to say good-by to the Begum; but she was gone, though she had been sitting close to us a few moments before. We hunted high and low but could not find her, and finally the old man went off saying she had probably ran home. But I had a message the first thing in the morning to say she was still missing, in fact had never turned up at all at her home. I did not stay in Srinagar, but went back to the bears two days later, but that was not the last I saw of the Chota Begum; though as Kipling says "that is another story."

"KALA BALU."

THAT MASTERFUL YANKEE.

THE writing of Mark Twain are full of instruction as well as merriment. Possibly you have read that wonderful story of his called "A Yankee at King Arthur's Court." The hero is a skilled mechanic, the foreman of a great factory in America. He is accidentally killed, we would say; but, instead of getting his body deposited in the grave, as happens to the most of us, he comes to life again, and finds himself at the Court of King Arthur in England in the sixth century, 1000 years before he was born. That was a time of deep ignorance and superstition; people were but children then. So with his knowledge and his nineteenth century training he soon becomes master of everybody and everything. He controls the Government and rules the whole country—exactly as a college professor would be superior to all the children if he should take it into his head to join the class at a parish school. Now let us see what this idea may mean to you or to me.

In the autumn of 1873 Mr. James Murphy, of 49, Townsend Street, Dublin (present address 5, Synnott Row, Synnott Place, Lower Ormer Street) had a severe attack of rheumatic fever and was under treatment at the Sir Patrick Dunn's Hospital for three months. When he left the hospital, but not the man he was before the disease laid upon him. Afterwards he was never free from it. For a while he would be comparatively well, then down on his back again. It would depend on the weather and other circumstances, you see.

Of his worst times he speaks in this way: "My ankles and feet were hot and painful, and would often swell to three or four times their natural size. Occasionally the pain extended to the hips, and had to be swathed in wadding from the thighs down to the ankles. In this way—now able to get about and now confined to my bed—I suffered for over seventeen years. The joints of my fingers and toes came displaced, or seemed to be so."

We don't need to point out what a cripple this sort of thing makes a man. If he were wounded and torn in battle or by machinery couldn't be worse off. Yet the number of people thus disabled is immense, and while rheumatism is peculiarly the disease of adults and old persons, the young (even children) do not escape it. If the disease were only understood—but let us not get ahead of our story. "At Christmas, 1890," continues Mr. Murphy, "I had a dreadful attack, and was confined to bed for seventeen weeks."

This took him clear through the rest of the winter and one month spring up to the first of May. What a dreary, miserable season must have been! There is no merry Christmas or jolly coming of the buds on the trees for a man in that situation. Still, it might have been prevented if he had known then what he found out later.

"All this time," he goes on, "I was in the greatest agony. I couldn't move myself in bed, and finally got so bad I couldn't lift my hand to my mouth, and had to be fed like a baby. Night after night got no sleep, and often wished myself dead. As for work, I thought I should never do a stroke again. The doctor who attended me gave me medicines, but I seemed none the better for them. I had long since lost all faith in rubbing oils and embrocations; I had spent pounds for them without benefit."

"One day, whilst still suffering great pain, I came upon a book telling how cases like mine had been cured by Mother Seigel's Curative Syrup. Not knowing what else to do I bought a bottle of Dr. Mannin, the chemist in Brunswick Street. After taking this medicine a day or two I had less pain, and I was able to leave my bed, and fourteen days later I had not an ache or a pain of any kind, and got back to my work. Since that time—now two and a half years ago—I have had no return of my old complaint. I never felt better in my life than I do now, and I thank God that I ever heard of Mother Seigel's Syrup. You are at liberty to publish my statement. I have been in the employment of Mr. Robinson, coal merchant, for the past ten years. Yours truly, (Signed) James Murphy, Dublin, June 23rd, 1893."

The mysterious American at King Arthur's Court was powerful because of his knowing what nobody else knew. Had Mr. Murphy known years before that rheumatism is caused by impurity of the blood, and that Mother Seigel's Curative Syrup cures it, he could have defied and banished that agonising ailment. We print these facts in order that his present knowledge may also be everybody's knowledge.

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PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, MAY 29, 1897.

[No. 11.]

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 11th June 1897.

Nellampathy. 25th May.—*Weather.*—A lot of rain has fallen, but just how much at the present moment I can't say. Hope to be able to next report. Mornings and evenings are very cloudy and monsoonish, and it seems as if the monsoon was coming in up to time this year. *Crops.*—Prospects are bad and the coming year will, I fear, be little better than the one just gone, as it is only the first blossom that seems to be doing anything. The second in almost all cases was an entire failure. *Plant-diseases.*—Very little, and coffee looking very well indeed. New clearings are simply wonderful. *General Health.*—A lot of sickness among Europeans and will be till the rain comes to wash it out. The Moplabs who were working on through the hot weather had at last to go as they were getting fever and dysentery badly. *Labour.*—Tamils not in yet. A few Malayalees available, but what work there is, is being done by Mulsers and Cadars.

Kadur.

MUDGIRI, 24th May.—*Weather.*—Half an inch of rain fell on the 19th and clouds coming up from the S. W., which looks very like an early monsoon. *Crops.*—There has been great failure; the total quantity of rain gauged though sufficient was badly distributed in small

showers. A second pruning will have to be done on most estates to take off a lot of useless blind wood. Few estates will give 2 cwt. an acre. *Plant-diseases.*—Borer has been seen on some estates, but not many. *Labour.*—A few ghauts have come in, and it is generally supposed that they will all be in up to time owing to the scarcity below. *Interesting Items.*—The new Sunday sante at Coombahully is working fairly well. Prices of grain much the same as in the Mudgiri sante.

Nilgiris.

COONOR, 27th May.—*Weather* very showery and hot since my last report. Simply grand for tea, which is flushing abnormally all over the district. Coffee planters not quite so enthusiastic, as they could do with considerably less rain and have some chance of approaching their "wood" estimates. As it is, things don't promise at all well generally speaking, and prospects are decidedly gloomy. Advances going up, though only slightly. Labour generally ample. Sickness of sorts rather prevalent.

SHOLUR, 27th May.—Temperature morning and evening in shade, 61° and 89°, respectively. Tea flushing well. Health improving and labour plentiful. Rainfall 8.41 to date.

S. E. Wynaad.

PUNDALUR, 26th May.—*Weather.*—On the 17th, 18th and 21st we have had rains. Since the 24th the weather is very hot during the day and every evening very cloudy. *Crops.*—The sowing of paddy is nearly finished, and the sowing of ragi and chamay is going on. Rice 8, ragi 18, gram 12 and salt 7 seers per rupee. *General Health.*—Fair. *Labour.*—Sufficient. *Interesting Items.*—The despatch of the coffee is come to an end. My writing to the *Madras Times* for the prevention of coffee theft on the 20th October 1892 under the heading of the Native Coffee Plantation (vide the *Madras Times* dated the 25th October 1892), since which the coffee stealing has come very much less again. My writing to the *Planting Opinion* under the heading of the Thieving Tribes as Coffee Labourers, vide P. O., dated the 9th May 1896, and this season I am glad that I did not hear of one coffee theft in this district and one or two in other districts, and I see that my writings took some effect for the prevention of coffee theft and that the theft is decreasing. M. Nuther Saib and Venekatasawmy got 28 tolas of gold from the Phoenix crushings, and the Nellyalom Ranees 15 tolas since my last report.

Coorg.

25th May.—*Weather*.—May has been a dry month, but we are having good showers now, on an average .50 cents every other day. Total rainfall for May 2-20, for the year to date 6 inches. *Crops*.—Prospects of crop are somewhat better, and a few estates will not do badly. Prices of all grain high: ragi 17 seers per rupee. *Plant-diseases*.—"Borer" shows up in young coffee, and open places with light shade. *General Health*.—Cholera is reported in some towns, brought in from Mysore. Estates free of it so far. Fever and colds common amongst coolies. *Labour*.—Sufficient for all requirements, and there is not likely to be a short supply. *Interesting Items*.—The Planters' Association will hold its Annual General Meeting on 31st May.

POLLIBETTA, 25th May.—*Weather*.—Rain nearly every day since the 18th to yesterday, both inclusive; amounts each day in most cases small, but totalling up on the whole to near an inch and over; signs of more rain not wanting. *Crops*.—Rain somewhat improved; prospects in helping to bring on what berries of the second blossom have set; but hopes of anything like good crops, except in individual cases, mostly dispelled. I hear that a place in North Coorg is expected to give an exceptionally big crop. *Plant-diseases*.—Coffee looking on the whole extremely fine with the exception of some borer showing up, and a little bug at long intervals. *Health*.—Fair. *Labour*.—More Canarese could be wished for. Contractors are being employed to push on with pitting. Estate hands employed on weeding, handling, shade thinning, &c. *Interesting Item*.—Theatricals at Club to-morrow night.

GENERAL NOTES AND ARTICLES.**Advances in Ceylon.**

It is not given to all of us to solve our labour and advance troubles in the merry Ceylon style, quoted from an Island exchange: "As an example of the worry caused to Superintendents by the labour and advance question, we learn that a well-known planter is in Colombo at present on leave, and intends to take a trip round the island, simply to get away from his canganies and their persistent demands for more advances."

Spices.

Prices for cinnamon are rising slightly, and the stocks are decreasing. Black pepper shows a great increase in stock in London, but the prices for Singapore and Penang are $\frac{1}{4}$ d. to $\frac{1}{2}$ d. above those in April last year. White pepper is statistically in a much sounder position, fully warranting the rise of $\frac{3}{4}$ d. to 1d. per lb. established in the leading sorts.

Kaffir corn.

This cereal that has been exciting so much attention in America and Australia, owing to the prodigious crops it yields even in the driest weather, is nothing more nor less than our common Indian "Jowari" or "Cholum," *Sorghum vulgare*. No less than 25 million acres are planted up with this product in Bengal alone, the yield (some $5\frac{1}{2}$ million tons, at 6 maunds per acre) being all consumed in the Presidency.

Scour in calves.

A correspondent writing on scour in calves to an Australian contemporary gives the following remedy:—"Take a two quart pot and fill it loosely with young gum leaves; pour in as much water as it will hold and boil for a quarter of an hour. Mix a tablespoonful of flour and one teaspoonful salt smoothly in as much of the infusion (when cool) as will half fill a lemonade bottle, and give it to the calf twice a day, a little less or more according to its age. I have never lost a calf under this treatment, though it may have to be continued several days or a week."

Rhea.

As we have already pointed out the present boom in the cultivation of this plant has come from home in the interests of manufacturers. Manufacturers, mind you, not consumers. This is clearly shown by the action of the Syndicate home in forming a practical monopoly by means of the patents of being able to treat Rhea by suitable machine. It may not of course take long for the trade to be established on a fair and independent position, but the present is hardly the time for men, unbacked by plenty of capital, to embark in this new venture. We do not fancy it will be long before we hear of the South India Rhea Syndicate Travancore following the example of its Ceylon congeners and voluntarily winding up their affairs.

Indian coolies abroad.

The Indian cooly is generally acknowledged to be the cheapest tropiculturist in the world. And there are few tropical or semi-tropical colonies where he does not form the mainstay of the agricultural industry. It is only when he starts on his own account, to rise above the status of a paid labourer to that of an independent farmer, that the Colonials object to him. Natal and Mauritius are both finding him a great deal too much in evidence, but they will have to give way to the inevitable in time, Queensland has had to do with her kanaka labour for sugar plantations. In Jamaica, they are still too few to cause inconvenience, and besides the island has essentially been an ultra-tropical one since its first rise as a colony. There are some 10,000 coolies, indentured and free, in Jamaica and are highly prized by their employers. In the way, it is curious to note that there are as many as 12,000 pure whites in the island.

Jubilee Bonfires.

A reader asks us to insert the following letter, with a further request to try and start the idea here, on the Hills of South India. *Que dit-on?*

QUEEN VICTORIA'S BONFIRES.

CARLTON CLUB, EASTERN

SIR,—Canon Rawnsley's Central Committee is now arranging to light at 10 P.M. on the evening of Queen Victoria's Jubilee Day—29th June—beacon bonfires shall gleam from one end to the other of our Mother-Country.

Cannot this bright idea expand to the oversea provinces and outposts of the British Empire? Cannot the Great Signal blaze from the thousand historic Heights of the Empire,—from Table Mountain and the Mattopos; from Mount Macedon and the Blue Mountains from Adam's Peak and Simla, from Mont Real and Mount Donald, from St. Helena, Fiji and the rest.

All can be achieved with ease by the mere organization betwixt of executive committees in every Colony and Dependency.

The hint itself will be sufficient and the Press will, I am confident, give rapid currency to the suggestion.

It will be a grand symbol of United Empire to know that on a particular night commemorative bonfires are blazing all round the world—lighting up a Fiery Cross to signalise peace, prosperity and progress for all who enjoy and profit by the beneficent sway of Victoria the Great.—I am, etc.,

GEORGE BADEN-POWELL.

CENTRAL HOTEL, INFANTRY ROAD, BANGALORE.

(Under English Management.)

The most comfortable and convenient for visitors.

TERMS MODERATE.

Jadoo.

Col. Thompson in writing to a contemporary cautions experimenters with his patent manure, against applying it in such a fashion as to expose it to being dried by the sun. For in such a case, the fibrous roots imbedded in the Jadoo will certainly all die off, causing a certain shock to the plant. Of course in this respect Jadoo is no different to any other manure or soil: fibrous roots dying in any and all mediums since the moisture necessary for their existence is withdrawn. To set off against this inevitable disadvantage, Col. Thompson claims of his fertilizer that no amount of rain will ever wash out its virtues. This is put down to the action of the gypsum (plaster of Paris or sulphate of lime) in fixing the chemicals in the fibre. A somewhat broad statement to make, and difficult to credit, more especially if our supposition be correct that liquid extracts may be prepared from the Jadoo fibre. Inventors are proverbially enthusiastic, so we will be charitable and merely take it for granted that Col. Thompson wishes to lay emphasis on the fact that his manure is not so soluble as pure chemicals. Otherwise, if rain cannot dissolve its constituents, how can the plant roots attack it so vigorously? For it is against common sense to suppose that the root-acids are strong enough of themselves to enable such remarkable results to be gained from the manure as are claimed by the gallant Colonel, its inventor.

Mushrooms.

To grow these successfully, the first essential is to procure the spawn bricks as fresh as possible. And this is best done by importing half a dozen at a time from some reliable seed firm in England, where the "bricks" cost about 2s. 6d. each.

It is quite useless buying them in the country, as we have ourselves personally experienced. When ordering, insist strongly on packing them in hermetically-sealed tins, as exposure to the sea air will quite destroy the vitality of the spawn. If you have got your fresh spawn, the following directions from the *Colombo Agricultural Magazine* will be found useful:—

"To grow a crop quickly, it is necessary to engender a moderately lasting artificial warmth in the material employed; yet, if possible, with moderate latent heat only. The place best adapted for their production is a rather damp godown or out-house; in this should be arranged a row of shelves at a short distance from the ground, on which the materials in which the mushrooms are to be grown should be placed to the depth of eighteen inches, and firmly beaten down. The compost best adapted for this purpose is made up as follows:— Fresh horse droppings six parts, cow dung two parts, sheep dung two parts, garden soil four parts, and fresh wood ashes one part. Before these are mixed they should be allowed to dry in the sun for two or three days to take off the excess moisture. After being mixed, and the bed made on the shelves as described above, they should be allowed to remain for five or six days till fermentation commences. As soon as a moderate heat is perceptible, the spawn should be added; this is done by making holes in the surface, about 12 in. apart and 3 in. deep; in each of these a small quantity of spawn, about 2 in. square, is inserted, after having first been dipped in tepid water; these should be slightly covered with the compost, and the whole beaten down firmly. After a month the beds should be covered with two inches of light rich soil, and the whole beaten down, and then well watered; it will now require no further attention, beyond occasionally watering the walls and floor of the room to promote a damp atmosphere. If properly managed, the beds should commence bearing freely in about eight weeks from the time of spawning them. On the plains the best time to start a mushroom bed is from September to March; in the hills from April to October."

Malarial Parasite.

At the last annual meeting of the U. P. A. S. I., it was resolved that the Secretary be instructed to move the Government of Madras to commence an enquiry into the question of the development of the malarial parasite on somewhat similar lines to the investigations undertaken by Surgeon-Major R. Ross and others; and the Association trusts that the theory as further developed by Surgeon-Major Ross and explained in his pamphlet on the subject, will be thoroughly investigated on the same lines as the investigation of cholera by Drs. Haffkine and Hankin. The Surgeon-General, to whom the above recommendation was referred, considered that the only means of meeting planters' wishes was to appoint a special Medical Officer to work solely at the subject of malarial parasite; and the Government of Madras addressed the Government of India. The latter authority has now intimated that in view of the present financial position and the urgent calls on the Medical Department for other duties, the proposed enquiry must be postponed for the present. A distinct promise is given, however, that the matter shall not be lost sight of, and, though they may regret the delay, planters will no doubt feel that it is unavoidable and that Government has decided wisely. It is not planters alone who will be disappointed, for, with laudable zeal, Surgeon-Major Ross applied, last October, to be placed on special duty for a few months in order to investigate the truth of Dr. Patrick Marson's theory of the Transmission of the Infection of Malaria by means of the Mosquito. It is to be hoped that a favourable answer may yet be returned, even though the exigencies of plague and famine will not admit of this being done at present. Meanwhile, the planters of Southern India have reason to congratulate themselves on the sympathetic manner in which the local Government has supported their efforts to promote scientific investigation with respect to matters affecting their industry. Another instance of this sympathy might be cited, with reference to the interesting subject of "Coffee-scale and Lady-bird" raised a few months ago by Mr. Howard O. Newport and promptly taken up by Government at the suggestion of the Hon. Mr. Hodgson.

Christian coolies.

Writes a much disgusted planter: "Why is it that the Native Christian is usually a scamp, lazy and insolent? He struts about under the mistaken idea that a pair of trousers European shape (!) and a coat and his religion put him on an equality as it were with his master.

"The missionary as a rule works hard enough in all conscience. I do not mean the gentleman who lives in the hills all the year round and drives about in a carriage; he is beneath our notice. The man I mean you will find if you look for him sweating his life out in the plains, poor beggar, with a run to the hills every five years or so, if he can afford it, giving up his life and health to be able to do his duty, or what he considers his duty. I do not wish people to think I look at mission work as humbug, far from it. I've seen too much of it not to know its hardships and privations. I've seen men living at 3 As. a day in a pestilential climate out of a sense of duty. They were fed and housed by the mission and doctored and allowed £20 a year for clothes and any private luxuries, but only a few drew this, and they were those who had no private means and there were some who had ample private means, gave largely to the mission funds, but this was not an Indian Mission.

"But to return to the main point, why is it that a Native Christian is mostly below the average of his heathen friends, for one must judge by results in mission work as in anything else? A planter would be thought a bad planter if he only turned out bad tea, if half the estate was poor jat, and only half good.

The missions have much against them; in this way most of their

converts are of the lowest castes, Pariar and Pallar, and such like. These men left to themselves and worshipping their own gods would never be up to *very* much, and somehow the missionaries do not seem to be able to get hold of the higher castes and a good thing, too, in some ways. A high caste native is forbidden drink by his religion as is the Mahomedan. Make them Christians and they at once begin to drink, and it is not as if they could hold their liquor or know where to stop; they don't and seemingly never will.

"You may, speaking roughly, say all Native Christians drink, and too much too.

"If the missionaries would keep them sober they would do a lot of good, and if they taught them a trade, so much the better; but instead of that they educate them, half educate them I should say. Fill them up with the outward forms of religion with never a thought of what sort of *men* they are turning out.

"They teach them to read and write, *cui bono*, and to talk our language, and they (the converts) make use of their knowledge to listen to all we say, read our letters, &c. The converts hear the mission people talking of planters as an unregenerate and unconverted lot of infidels, and morally pat themselves on the back and think they are better than we are. When this is the case, can you wonder when planters reciprocate the dislike and decline to employ Christian native labour. Amongst the Kaffirs in Natal, if you want money you must send to the town 200 miles away; get a *raw* native and trust to his honour and you will not lose a penny. Try it with a *mission boy*, and you may whistle for the cash once it's been in his hands.

"Now all other things being equal, I'd rather have Christian coolies, but as they are not equal, give me the heathen who goes and worships his swami under the big fig tree and *believes* in him. I want no "Kistin boy," not by any means."

And so say all of us!

CASUAL JOTTINGS.

In reading the prefaces of some books, avowedly addressed to myself in the term of "you, the gentle reader," I have usually found myself in the position of the respectable Christian when he pretends to believe he is a miserable sinner. That is, I have always imagined the preface or prayer addressed to some one over my shoulder. So, though I want to get at the reader (yes, *you*, who are glancing over these lines sleepily, wondering what the deuce my last "Theory" is) personally and directly, I don't quite know how.

Being holiday time, Mr. Editor, I don't doubt you will spare me some of the space your deftly-wielded scissors often fill. Ha! *touche*? You know, you (very unwisely, no doubt) hinted to me in a weak moment that my scribbles might now and then, at long intervals, be of some use. If only to put some head on your own heavy planting liquor. As a young planter, strong in the impartial conceit that full-fledged ignorance bestows, I am of course entitled to teach all my elders to suck eggs. You can cut all the above right away, as I'm just beginning to find out what I want to write about.

And it is all about "why planters should never write to the papers." Least of all to their own trade journal. To begin with, it would perhaps tend to lessen some of that savage self-conceit only bred by abnormal growth of angles and peculiarities, allowed or encouraged by isolated planting life. It might be called rugged independence, with more politeness if less candour. It would indeed be a bitter shame to rob an honest man of perhaps his greatest virtue, would it not? So on no account, my honest rugged reader, set you down to your table and exchange ideas with your fellow-planters.

It is so awkward too, you know, to find your pet idea given with so much confidence to a doubting world, cut up by abnormally critical correspondents. And yet up to the day, you felt so perfectly sure that you were right in your methods. So sure, in fact, that you felt them to be too patent to write about.

For instance, do you remember that great row in the Club with Green, which began in your arguing that because cereals were not perennials, English agriculture couldn't teach coffee-planters anything they didn't know before? I won't hurt your feelings by repeating the argument at length, but I can't help sighing at the abrupt way you pressed the conclusion down Green's throat. You shouldn't have used your fist though; now should you?

To the impulsive planter, nothing is more tiring than newspaper controversy. He doesn't seem to get any forrader with it. No opportunity, in this doucely conducted journal at least, to have a good old slanging match. He must just confine himself, if he can, to the argument. And as he can't, why, he just sticks to his long chair.

TOMMY'S LOVE.

I DON'T mean his first love, nor his last. Simply Miss Bella Smith, up to Mercara from Mangalore for the hot weather. And she was a dear little girl too. Not very pretty or very clever, but she had brought a bit of English sky with her in her grey-blue eyes. Tommy said he felt as if he were at home again when he was staring particularly hard into those same eyes. He certainly looked it, very much at home indeed.

One evening, after tennis on the flag-stone court in front of the Court House, they went their usual stroll round the old fort. Talking of all things in heaven and earth, and a good deal that belonged to neither, the conversation turned to the "Very Modern Woman." Miss Bella and Master Tommy were on rather intimate terms.

"And what do you think of this 'newspaper myth, whom no one has ever seen out of the columns of the comics?" quoth Bella, with her steadfast eyes fixed full and square on Master Tommy's ingenuous countenance.

"Rare good sort, I should say, don't you know. Ever so much better to stand on her own hook than cadge round on all the men. Admire a girl like that immensely. Though—" Here Tommy stopped and enjoyed the English sky of her eyes.

Miss Bella had seen a good deal since she first came out to India to join her brother—a padre of sorts—in his Mission work on the West Coast. Tommy was a happy young planter, wise after the fashion of his race in much out of the way love. This is by way of introduction.

"Of course, the 'Very Modern Woman' really goes too far," Tommy went on, the sky getting overclouded. "Riding a bicycle, working for her living, going about in open masculine dress is all very well. But when it comes to—well, you know, other things, hang it—" He broke off short, confused and uncomfortable. As well he might. He changed the conversation.

"I say, Miss Smith, do you know what your—"

"What my eyes remind you of? You have told me twice already. Jungle life does make you planters so dull

y something else. Ah, there's that nice man, Mr. Tweedale! I'm so glad he's coming this way. I think he a credit to your community, always spick and span, even his plantation. What do you say? Well, goodbye. How do you do, Mr. Tweedale?" she rattled on, as this gentlemanly individual stalked up. Poor Tommy, I always felt for him so.

A PLANTER IN AFRICA.

I WAS tired of Ceylon, and got an offer of a good billet in German East Africa; and being told the climate and shikar were good, I jumped at it. The climate is rather warm in the plains, and delightful in the hills, until you stir up the soil, when it's fearfully feverish: pucca black-water fever. And as I came out as a planter, the results were inevitable. First thing I had to do was to drain out a lot of swamps, which was something like cleaning out cess-pools. The planters are mostly Germans of sorts. One was a very decent chap, rest were an awful lot of bounders. My brother Englishman made me a trifle ashamed of my nationality. I landed at Tanga on the coast in October 1893. Lovely harbour, Tanga, land-locked on 3½ sides, large enough to float ships of 4,000 tons at present. I marched up country: took me 2½ days in the very long marches of 20—30 miles a day.

First thing I did after planting up a ten-acre patch was to go down with fever for a fortnight. I got better, and my other Englishman on the tote had a row with the African labour and left for the coast. I couldn't speak a word of the language, but quickly gathered they thirsted for the other man's blood. The plantation was only 90 acres planted, 50 more ready to plant, and at the end of the year we got it up to 350 planted. The "reserve" was a block of 275,000 acres. Lots of room for extension! All coffee, except two acres of wretched tea. Grew lots of native food, arrow-root and so on for estate consumption. Leaf disease first appeared some three months after I arrived in the oldest coffee about 15 months' old. Started on one or two trees, and I promptly spotted it and reported it to my boss and in fact the whole district. No one believed it at first and said I was drivelling. I burnt the affected trees at once, and sent specimens of the leaves to Kew and Berlin. Before we could get an answer, the pest had increased to such an extent that confirmation of my surmises was no longer needed. On making enquiries I found that the seed had been purchased in Colombo by the German Consul. It was reported that he bought the seed ignorant that it was to be used for planting. Ten per cent. at least was light. Of the balance only about 30—40% came up fairly strong plants. The best of these were planted out with the above result.

The course of the disease ran curiously. It took a strip away from the lines right down a field. Then it worked back over a ridge through a break in the wind belt to another clearing, where there were two very large nurseries. There it played mischief with. These plants were put out and the whole estate got affected. I left before the full results could be seen, but I noticed the only unattacked portions were some line coffee and a little bit of a shade clearing. Nearly all the rest of the coffee was in the open, pucca Ceylon style, barring a few odd trees some 40 to 60

feet apart, that were only left because they were too big and expensive to cut down.

"WANDERER."

(To be continued.)

FRUIT PRESERVATION.

IN view of the immense market which may one day be open to some of the luscious fruits of India, the following results of cold storage tests at Dartford may prove of interest:—An interesting experiment in the preservation of fruit by means of cold storage has been carried out during the past season by the Technical Education Committee of Kent County Council at Dartford. The test has been superintended by two members of the committee, Messrs. Hesketh and Chambers, whose reports are now issued. They state that the stores were kept at steady temperatures of 30 deg. and 40 deg. until near the end of the year, when it was considered there would be no further utility in prolonging the experiment under the same conditions. Mr. Hesketh's report proceeds:—This fruit loses weight somewhat during the refrigerating process, as is evident by the amount of moisture collected off the brine walls, which amounts to 1·5 per cent. of the weight of the fruit per week. The moisture is absorbed from the fruits by the air during its natural circulation in the chamber, and deposited on the colder surfaces of the brine walls, from which it is drained away. The air is thus kept in a dry condition. An object in future experiments will be to reduce this desiccation of the fruit, but still maintain the dry condition of the air which is so essential in avoiding mildew. A careful log has been kept of the working expenses, and this shows that the total cost of engine power (gas at 3s. 6d. per 1,000 cubic feet being used in an engine) and all stores amounted to 8·9d. per day. This does not include anything for labour, as only the occasional attention of a labourer otherwise employed is required. The cost of working by an oil engine would be approximately the same. The refrigerating machine, which is the smallest size practicable, was capable of dealing with a much larger chamber, its average hours of working per day being only three and a half. If an average of twelve hours a day for the working of the machine is taken, it could then maintain a store 24ft. by 24ft. by 8ft. high, which would be capable of storing some 2,000 bushels of apples. The cost of working the machine on such a chamber, based on the experience gained in the recent experiment, would be 2s. 2d. per day. Of course larger installations would cost much less to work in proportion to the quantity of fruit kept. It is proposed to make experiments during the coming summer on the soft fruits as they come in season. In that portion of the experimental work managed by Mr. Chambers, 4½ bushels of fruit were stored in the chambers for 101 days and 35½ bushels for fifty-six days. Mr. Chambers states that some of the summer apples left in the store until the close of the experiment were found to be sound, but were not so good in flavour, and were somewhat soft. On the other hand, the winter apples were of as good flavour as when put in, and were fully as hard and sound.

RUBBER GROWING.

The *Australian Tropiculturist* for March has a special article on this subject, referring to the industry as a new fortune-promising one and calling upon the Government to plant up all available coastal areas, since "flat alluvial river lands are regarded as the best soil for Indiarubber trees."

Regarding *Castilloa*, it is said that the tree thrives best in moist but not marshy forests, on a warm sandy clay.

For each plant a hole should be dug 3 ft. in diameter and 1 ft. deep, and filled with fine loamy soil to which a little sand has been added. The mixture should be well trodden down and watered night and morning for two days, when it is ready for the young *Castilloa*, which must be placed in its new bed at exactly the same depth as in the nursery; if it is weak, a stack support is very desirable.

To this might be added that the young plants should be at least 15 feet apart. But it cannot be reiterated too often that the locality must be a sheltered one.

A curious fact about the *Castilloa* is that frequently natural ropes of rubber are found hanging from the tree formed by the tapping

of the bark by wood-peckers, the exudation of the creamy sap that coagulates as it trickles slowly down.

The method of harvesting the sap is as follows:—Immediately below the first branch a horizontal canal is cut, V shaped; from the point of the V downwards a perpendicular canal is cut till it joins another horizontal V, and so on down to the ground. The sap is guided into a receiver, and the water in it evaporates. Evaporation may be assisted by artificial heat, and coagulation is forced by an agent. Then Indiarubber is formed. The canals should be plastered with mud or clay, to protect the life of the tree.

The quantity of rubber produced from the sap depends largely on the coagulating agent used. Sixty per cent. *ought* to be converted into rubber. An ounce of alum in a pint of water (not Imperial pint) is a good agent; a weak alcoholic solution is better, because speedier.

The commercial profits in the rubber trade are so enormous as almost to challenge belief. The traders who deal with the natives purchase for mere civilised trumperies hundreds of pounds' worth of rubber; these sell at the last-named price to the merchants; what the merchants make would be difficult to estimate. So long as this system is open to the enterprise of the New Guinea pioneers trading in the interest of Melbourne and Sydney syndicates, they are not likely to trouble to preserve the trees!

As one object of this article is to show that rubber-cultivation may be more profitable in the long run than rubber-piracy, it is necessary to quote figures as to profits made by such cultivators. Here, unfortunately, one has to go to the other side of the world for startlers. A typical estimate of a 500-acre rubber farm in Nicaragua made the eighth year's profits £44,337 10s.! "And the yield increases every year, with no outlay except for weeding and harvesting."

This calculation could scarcely apply to Queensland, because the cost of even kanaka labour would be more than that of Nicaraguan. But in a plantation of trees planted 15 ft. apart, coffee, sugarcane, and other shade-loving plants, yielding yearly crops, might be sown.

The life of a rubber-tree has never been exactly stated, but the New York *World* mentioned in 1892:—

"Three young trees transplanted from the forest to a cultivated field in Soconusco, Mexico, are now said to be seven feet in diameter, and have yielded rubber for more than 35 years; the present product averaging more than 50 lb. of gum per year."

The average increase is estimated to be 1 lb. of rubber for each year of the tree's life up to a certain age. Trees tapped in the wet season are said to yield five times as much milk as when tapped in the dry.

WYNAAD PLANTERS IN THE FIFTIES.

It was nearly 38 years ago that the following letter was written to the then Ooty paper, but things do not seem to have advanced very far since those days:—

COFFEE PLANTERS IN WYNAAD.

TO THE EDITOR OF THE SPECTATOR.

MY DEAR SIR,—A great deal has lately been said and written about Wynaad and the good things in store for the Planters, but very few people out of Wynaad have an idea of the troubles, difficulties and vexations, by which they are beset, and how these troubles are augmented by the wretched laxity of the native officials—the only description of official we have in this part. So well are the natives aware of the almost impossibility of a European recovering an advance, that the headmen of the Pardies or villages, will sign *any* agreement, and bind themselves under *any* amount of penalty to get an advance, and the manager is indeed fortunate who succeeds in getting his advance worked off clear.

We are told that, as a breach of contract, it can only be dealt with in a Civil Court. I will mention a little experience of my own. About 32 months ago, being determined to try what could be done in this Civil Court, (though I was laughed at for my pains) I employed a Vakeel, paid him 50 Rupees for commission, stamps, peon's batta, &c., &c., and entered a few suits against certain Moplas and Cooroombars who were considerably indebted to me. Each of these men had signed an agreement before witnesses, and bound himself under a heavy penalty to perform his contract. Up to this time, *nothing* has been done, nor do I see the smallest probability of anything being done.

So notorious has this state of things become, that a Mopla or Cooroombar maistry will laugh at you when you threaten him with the Court. If a Moonsiff's peon is sent to their village to serve summons upon them, a bribe will prevent their being found. The only chance you have is to promise a good enam yourself and then a risk is run of your being outbid.

A few days ago, a notorious thief was found on a neighbour's estate. He had broken into the rice store, and helped himself to much rice and tobacco as he could well carry; he was watched, secured close to the store with the stolen property on his person. The Ameen's peons were sent for to take charge of the fellow, though only seven miles distant, they did not make their appearance for three days. In the meantime, one of the Police peons, at the request of the Tambercherry Ghaut, was sent for, but the messenger returned to say that the peon refused to come, as his comrade was absent. For three days then this thief was secured and fed by the manager of the Estate. At last the Ameen and staff make their appearance, and from the attendant retinue, one might have supposed that summary justice was about to be administered. Not so however. The prisoner and his booty are taken charge of, and the manager—wiping up to his eyebrows in work making the most of the rains to get his land planted—is given to understand that the case cannot be tried in Wynaad, but that he will be required to send a lot of people to his Estate to Tellicherry and either appear there himself to prosecute or empower some one else to do it. In Wynaad, we have a Tahsil, a Moonsiff, an Ameen, and a host of other native officials. Yet a simple case of theft discovered may probably entail the necessity of a manager leaving his Estate, at a time when his presence is essential to go some 50 or 60 miles, taking with him a number of his peons. With reference to advances I fear no contradiction when I say, that we planters are systematically robbed and that literally without remedy. We can get no labour without making large advances, and in many, many instances, though the advance is made under a promise, with a heavy penalty for non-fulfilment, the receiver's face is never seen again. Most likely he is cultivating a piece of raggie land with two or three advances previously obtained from other victims.

We have been told a European Magistrate is to be appointed to Wynaad with power to deal summarily with advance cases. His distance however intervenes, and the natives evidently don't believe in it, or they have determined to make a harvest before he comes. There are upwards of 40 European Planters (proprietors and managers) now in Wynaad, and our numbers are yearly increasing, but really things are becoming so rapidly worse and worse, that some, who would under other circumstances go more largely into Coffee cultivation, are being driven back. Mysore is fast failing us for labour, and in proportion more is required so is the supply less. There is but little encouragement to any private individual now to open a Coffee Estate. Heavy hill work, much exposure and a great prospect of losing large sums in advances, are evils which array themselves before the would-be cultivator.

Pray excuse my trespassing so largely on your columns, but I think the present state of affairs in this feverish part of the world should be known. Hoping on still for a "good time coming,"

I am,

Your's very obediently,

GROWER

BACK WOODS, 28th July, 1859.

POTASH IN PLANTS.

THE NEED FOR SPECIAL POTASH FERTILIZERS.

SOME months ago we referred to the belief, says the *Agricultural Magazine* of Ceylon, that was gaining ground in agricultural circles that the value of potash in agriculture was not correctly estimated, and that much benefit was to be expected from a more extended use of kainit and other special potash fertilizers. In countries where particular use is made of ashes, it has been thought sufficient to use them for supplying all the potash that is considered necessary for cultivated plants. The amount of potash in wood ashes and other refuse substances used for supplying this ingredient is never uniform quantity. Thus wood ashes that are supposed to contain 5 per cent. of pure potash are frequently found to have not more than 2 or 3 per cent., and the difference in the potash value of wood ashes cannot be detected by its appearance.

We have just been favoured with no less than three publications

reference to the value of potash in agriculture, two referring to the results obtained in the United States and one dealing with experiments in Britain. In the last mentioned, entitled "Potash Manuring—its value to British Agriculture," the authors, Dr. Aikman and Prof. Wright, state that the necessity for potash manuring has not hitherto received the recognition that has been accorded to the case of other two important plant foods, and that they (the authors) have set themselves to examine the cause of this comparative neglect of the potash manures, and to consider how far the neglect is justifiable in view of the results of a number of recent experiments.

It has not yet been made quite clear what function potash exactly performs in the plant, but that no plant is able to grow without it has been proved again and again. Soda, which is an essential element of plant food, was at one time thought capable of replacing potash, but this was shown to be false. No other substance can replace potash which is a necessary constituent of all plants. It is a noteworthy fact that even in plants grown in the vicinity of the sea potash is more abundant than soda, although the latter salt is thirty times more abundant in sea-water than the former. The quantity of soda varies very considerably in plants according to circumstances, but nothing like the same variation is found in regard to potash. Its functions in the plant though not well understood are known to be important—more important than those of any other ash constituent except phosphoric acid. According to Liebig it plays an important part in the distribution of the carbohydrates throughout the plant. It is always to be found in the actively growing parts of vegetation, as in the growing buds and roots, and exists in relatively large proportions in the seed. In wheat grain, for instance, potash forms 31 per cent. of the ash, while in the stem it forms less than 14 per cent. In the ash of plants potash occurs chiefly in the form of phosphate, chloride, and carbonate. It is believed that most of the potash is absorbed in the form of sulphates and phosphates, and probably also as silicate. In whatever form it is absorbed it has at any rate been proved beyond doubt to be absolutely necessary for the growth of crops.

It is a generally accepted principle of manuring that potash manures need not be applied to clay soils which are considered to always contain a sufficiency of the constituent. Actual analyses and experiments on the field have shown, however, that this reasoning is not quite reliable. Though the presence of a fair proportion of clay in a soil may be accepted as a guarantee of the presence of potash, it is not always so. There are soils containing much clay that do not contain much potash. It has been found by experiments that potash manures produced a large increase of crop, though the field to which the manures were applied was of a stiff and clayey nature, such as would be described as a stiff clay loam.

Again, potash may be present without being effective. The ordinary methods of chemical analysis can determine the amount of potash in the soil, but of that amount it may happen that the greater proportion exists in a condition in which crops are unable to make use of it. The ordinary solvent agencies in the soil have but a limited power of dissolving insoluble compounds in which it chiefly exists, and that too only on the limited region of the soil particles with which they come into the most intimate contact. Hence a soil may be rich in potash, and yet that potash, or the greater part of it, may be quite unavailable, or be available in quite insufficient quantity for the needs of the growing crop which might, therefore, largely benefit by the application of an artificial potash manure. Before it can be safely concluded, from its composition only, that a soil will not be benefited by potash manures, it is necessary to know not only that the soil contains much potash, but that it contains it in a form in which it is readily available for the use of plants.

Some soils contain as much as 3 or 4 per cent. and more of potash, while the soils which are generally poorest in this constituent are sandy and peaty soils, and these latter are generally found to produce a considerable increase of crop by the use of potash manures.

The variation in the amount of potash soluble in water in a soil usually ranges between a thousandth and a hundredth per cent. The remainder is usually present as hard insoluble compounds which are not available for the plant's needs, and only very gradually, with the lapse of time, become so. There are, however, certain compounds which, while not soluble in water, are believed to be more or less available for the plant. The water in the soil, by virtue of carbonic acid and certain other organic acids which are dissolved in it, has a greater solvent power on mineral substances

than pure water, and this solvent power is further aided by the acid nature of the juices in plant roots. A striking instance of the power of roots to dissolve insoluble substances can be seen in nature by tracing the roots of such plants as ferns that appear to cling to the bare surface of rocks.

Dr. Bernard Dyer, who has been endeavouring to estimate the dissolving power of soil water and plant roots on mineral substances such as potash, has come to the conclusion, after a large number of determinations, that the sap acidity of roots is equal to a one per cent. solution of citric acid. Testing certain soils with a solution of this strength he has found that the amount of potash available is very much greater than that indicated by testing it in pure water. Thus in two soils, in which the total amount of potash present was about $1\frac{1}{2}$ per cent., the available potash was four thousandth and three hundredth of a per cent. respectively. This is much more than could be dissolved by pure water, yet this result also shows that only a very small proportion of the total potash in the soil may be regarded as immediately available to plants. Of this small proportion available, it must be noted also that a loss by drainage of the soluble potash in the soil is constantly going on to a greater or less extent.

In our next issue we shall continue our notice of the interesting pamphlet referred to by Dr. Aikman and Prof. Wright, so as to place the latest information with reference to potash in soils and potash manures at the disposal of our readers.

LETTERS TO THE EDITOR.

NOTICE TO CORRESPONDENTS.

["Anon." Very sorry your copy-right in this *nom-de-plume* has been infringed. Would it not be as well to choose a slightly more original one, we have a hazy recollection of seeing it before, you know!

"Answers to Advertisements." These should be fully stamped and addressed: "A.B.," C/o Manager, "Planting Opinion," Coonoor.—Not to the Manager direct.—Ed.]

SPONGING HOUSES.

DEAR SIR,—There is one thing I should like to warn my fellow-planters against, and that is staying in a Ceylon Hotel. There is no need to explain the meaning of Sponging House to any readers of *P. O.*, to most of whom it will be associated with a perusal of Dickens and Thackeray and a savour of Chancery Lane as it was before imprisonment for debt was done away with. A Sponging House may fairly be called a reminiscence of a past generation, but that they exist at the present day, any visitor to a Ceylon Hotel can vouch for. In the planting metropolis (Kandy) of Ceylon, according to a letter of the Manager of the Queen's Hotel, the authorized charge for a whisky and soda is 80 cents of a rupee (8as. for whisky and 5as. for a soda). Why not charge half a crown a drink while they are at it? Another charge made in the same Hotel is even more monstrous, 10as. for a cup of tea. We all know Ceylon Tea is an extremely valuable commodity, being worth on an average about 8d. a lb., and presume that the charge of 10as. a cup is based on the value of the tea, but all planters will consider a charge of 10as. as going one better than the old-fashioned Sponging House.

"VERITAS."

GARDEN PLAGUES.

DEAR SIR,—Perhaps you or some of your readers could inform me where I can obtain some good "bird lime." I believe they make it in Madura or Tinnevely, for long ago I read that bears were captured with bird lime. On a moonlight night a dozen men armed with spears and bamboos sallied forth for the haunts of Bruin; the ends of the bamboos were covered thickly with bird lime; directly the bear was seen, a dozen bamboos were plunged into his hair and twisted, so that the captive could not move; then the spears made an end of him.

I want the bird lime for my fruit. The Italians capture

such thieves that come for figs with strings coated with bird lime, stretched from pole to pole, and thus not only preserve their fruit, but secure a supper of little birds.

My tormentors are bulbuls in hundreds; to them nothing is sacred, from peaches to apples. There are other depredators, such as two kinds of *Paradoxurus*, one very like another in its fur; the other has long hair. They climb trees and eat every kind of fruit, coffee especially; one fellow devoured six thorny opuntia fruit, and was none the worse for the thorns; a short time after he fell a victim to a spring gun. In his stomach were found seeds of coffee and cherry moyer.

For rats and squirrels a figure of 4 trap and a heavy stone keeps them in check, but the birds are my trouble. A gun in a garden does more damage than good.

AGRICOLA.

IMPROVED COFFEE SEED.

SIR,—I have not been able to reply to "I's" letter in your issue of April 17th before. Allow me to state that the remark which appears therein, viz: "We have however reason to believe that Mr. Grey's ordinary seed was from poor quality" is not correct, and he has no "reason" whatsoever for making the above statement! It was a fair sample of "unprepared" seed coffee, bushels of which are sold every year from Rs. 30 to 35 per bushel.

"I" is quite correct in stating that Mr. Cochrain's analysis of Ceylon coffee showed 4.40 per cent. of "ash," but Mr. Hughes could only find 3.30 per cent., and is, I believe, a truer test.

"But" (a big B please P.D.) will Ceylon show that now (a sample from that Island will oblige!)

The moisture shown by Mr. Hooper was from the "prepared" seed.

To go back to the "wonderful" nurseries "I" has seen, has it ever struck him that nurseries are now *freely* manured, backed; are used filled with *good jungle soil, etc. etc.* Let "I" make up a "bed" on "ordinary soil" and put in his seedling as used to be done 20 years ago and report result. I think he will look in vain for a *decent* plant. I honestly believe the whole secret of getting supplies to come on commences in the *nursery*; if the seedling is a poor one, it is bound to suffer when put out in the field. (I am not thinking about new clearing; that is another horse altogether, but the successful rearing of "supplies.")

Is it a fact that "I's" statement in the latter part of para. 2 of his letter under reply is correct? If so, how is it one hears so much about "I can't get my supplies to come on"! "Do what I will, my young plants go back directly I put them out," etc. etc.!!!

"I" says secondly if "my ordinary" seed is a fair sample, then coffee in S. I. is in a bad way, and I rather fancy "I" is right if he will study the following figures of coffee seed from three or four leading districts, the same being what these districts sell as "seed," I believe:—

Nellacotta	... 2.7 ash with parchment,	2.6 ash without parchment.
Coonor	... 2.1 " " 2.1 " "	
Coorg and Mysore	2.9 " " 2.8 " "	
My ordinary	... 2.6 " " 2.6 " "	

My "prepared seed" show the following, 7% ash with parchment and 3.7 ash without parchment, and it is now left with my brother planters to judge which is the best.

The most important point in "I's" letter is the following question:—"When a seed containing parchment....., does the parchment in ANY way assist towards contributing sustenance to the seedling?"

I referred this question to Mr. J. Cameron, of the Botanical Gardens, Bangalore, and this is his reply: "In the coffee seed, the seed coats (one of which is called parchment by planters) contribute food material first to the cotyledores (seed leaves)

and subsequently through the latter to the embryo. In the early development the cotyledores of a coffee seed are very small, but during germination they grow very rapidly at the expense of the reserve material in the seed coat and eventually fill the whole space in the seed, the coating falling away in their shreds. The so-called coffee bean is a mass of horn substance reserved in the seed coat. The outer covering (berry) has usually a protective function, although at a certain stage of maturity it may also contribute towards the sustenance of the vital core (embryo) it is the final base to draw supplies from.

The above statement should satisfy "I". I have written Dr. King of Calcutta on the subject, and on hearing from him will send you his reply.

"Toda's" letter on 17th April, P. O., ought to interest "I". "Toda" seems to have some difficulty in getting his supplies to come along!

May 22nd.

L. W. GREY.

COST OF LIVING ON A PLANTATION.

I.

SIR,—The following facts may be of interest to some of your readers. My monthly expenditure for food and servant is as follows:—

	RS.	A.
Pay of butler	...	15 0
Weekly bazaar @ 3-12	...	16 4
One tin kerosine oil	...	3 0
Bread	...	2 0
Milk	...	1 0
Tea	...	1 0
Porridge 1 tin	...	1 6
Butter	...	2 0
		41 10

The bazaar account includes meat, vegetables and fruit, and lots of both. Price of meat $2\frac{1}{2}$ to $3\frac{1}{2}$ annas per lb.

I don't say this is exactly luxurious living, but with the extra Rs. 8-6-0 to make up the round Rs. 50, one can get along fairly well. And I have lived, too, a great deal cheaper. For over 18 months my monthly food and servant bill ran to only Rs. 35. Any young planter should find Rs. 75 per month sufficient for food, servant, smokes, a drop of whisky, and plantation clothes.

Yours faithfully,

EX-CREEPER.

II.

SIR,—In the number of the *I.P.G.*, dated May 9th, 1897, a letter from an Indigo assistant in which he bewails the smallness of his pay and the impossibility of making ends meet. Below is his letter:—

PAY OF ASSISTANTS IN INDIGO.

A Correspondent writes:—I am sending the enclosed account as a statement of my expenses per month. These have been made up carefully and I think are fairly correct; but I have left out a few things that would immediately be dropped upon as luxuries.

Also in a few places it may yet be disputed, but this statement as I feel fit to expend.

Assistants' pay seems to have remained unchanged for years, but have other things remained so? No, by no means! Bearer's, servant pay has all been increased, even fowls are more expensive. Rice, believe, could have been got at 8 seers a rupee, is now at 10 seers and in proportion it is the same with other grain.

No, it still remains a puzzle to me how the assistant pulls through on his pay, and I trust some one else will send up their account as well.

It has long been urged that our pay ought to be raised; this cannot be done unless we combine; let us start by a correspondence in the *Indian Planters' Gazette*, and that afterwards will give us a basis to work upon, and courage to bring it properly forward.

	Rs.	A.	P.	Rs.	A.	P.	REMARKS.
arer	7	0	0				
ansama	6	0	0				
hter	6	0	0				He gets extra for other work.
ok	6	0	0				
obi	4	0	0				
salchi	1	0	0				The rest is paid by factory.
unkhawala	6	0	0				
rden Cooly	2	8	0				
arwah	2	8	0				
bu	8	0	0				Not supplied during these months by factory though necessary.
ass cutter	13	8	0				
od	25	0	0	62	8	0	
hisky (3 bottles)	9	0	0				
Soda	4	0	0				
Beer, Bass, Rs. 7-8 doz.	18	0	0				
a, 2 lbs.	2	0	0				
gar	3	0	0				
cocoa	2	0	0				
obular Salts and Saltpetre.	5	0	0	68	0	0	
rain for horses	20	0	0				
ood for dogs	12	0	0				Rice 10 seers a rupee.
uffalo's food	3	0	0				
able necessities	3	0	0	38	0	0	
stamps	4	0	0				
ub subscription	5	8	0				
undries	2	0	0				
				11	8	0	
income tax Rs. 3				6	0	0	
doctor's fee „ 3							
				186	0	0	

Pay Rs. 150 and Rs. 25 horse allowance=Rs. 175.
This leaves you Rs. 11 to the bad monthly, leaving out expenses for tobacco, medicine, stores of any kind, books, any saddlery, clothes, and subscriptions, parades or meets.
3rd May 1897.

AN INDIGO ASSISTANT.

It strikes me that he has got more servants than he wants. Bearer I pass. Mehter ditto, cook ditto, also punkhawala and nati, and dhobi. The masalchi also is needful, that gives six servants for this exacting young man. He can quite well do without his Khansamah and Babu and Charwah. He puts down Rs. 13-8-0 for grasscutter. How many ponies does he keep. Food Rs. 25 is ample. Whisky, soda and beer, well it all depends what a man drinks, but I thank my stars I am not such a sink. I am not a teetotaller by any means, but I find a bottle for myself and another one or two ample for passers by and two doz. of soda.

Tea, sugar, cocoa, well and good, but I don't know what he wants with saltpetre, unless in cartridges. It can't be medicine, for he says medicine is not allowed for. Gram for horses Rs. 20. How many ponies does he keep? Two tats should do his work, if he does not mind a small amount of walking.

Buffalo's food Rs. 3 and stable necessities ditto are all right, as are also the balance, stamps, club subscriptions, sundries, income tax and doctor's fee.

I grant the pay is small and it is a pinch, but his estimate of expenditure is in my mind excessive.

In Kashmir my expenses were about the following, not counting luxuries:—

	Rs.
Food	35
Kitmudgar	10
Cook	12
Dogs	3

	Rs.
Pony and syce	17
Liquor and tobacco	12
Mehter	6
	Rs. 95

In Ceylon an assistant begins on Rs. 83'33 cents and a kitchen cooly.

Food may be put at	35—40
Boy	17—20
Dogs	0—4
Liquor	5—15
	57—79

This of course means very plain living, pinching in fact in every way.

Up here, I am compelled by circumstances to live as cheaply as possible for the present, and I find I can do it for about Rs. 55 a month.

	Rs.
Servant	15
Food	25
Liquor (Nil)	0
Tobacco	5
Medicines, etc.	5
Sundries	5
	Rs. 55

I should not have thought it possible till I tried it, and it's not nice. But I wonder what an Indigo assistant would say to it.

ON THE CHEAP.

MANURING TEA AND FLAVOUR.

SIR,—A few weeks ago you quoted an "old and experienced planter's" remarks on the vexed question of tea and flavour. The writer takes it for granted that the point has been settled once and for all. Allow me to disagree with him. It is so easy to make an assertion, but, as your correspondent may find out, rather more difficult to demonstrate its correctness. Whether it pays or not to manure is another question, altogether outside of the present argument.

The flavour of tea may, or may not, be affected, adversely or otherwise, by manuring the bushes. According to my ideas, it depends

- (1) on the state of the bushes;
- (2) on the condition of the soil;
- (3) on the quality of the manure;
- (4) on its quantity.

If the bushes are in vigorous life, the manure should, I think, be applied very judiciously indeed, for extra-quick flushes cannot fail to be inferior both in flavour and quality generally. Especially if the soil also be good to start with. On the other hand, if both the bushes and soil are poor, manuring may be undertaken with confidence, as slow, hard flushes all the year round cannot fail to give most inferior tea.

Touching on the quality and quantity of manure. These can only be rightly discussed when a knowledge has been previously acquired of the condition of the soil and bushes.

It must be remembered, however, that besides the actual "flavour" of tea, a very important point is that of "body" and "strength." In other words, that for practical purposes, it would be well to broaden the argument and consider the total market value of the tea instead of the flavour alone.

My above remarks on flavour apply, though with diminished force, to "market value" also. Can your former correspondent cite any authorities, beyond his mere *ipse dixit*, that manure is the panacea he evidently holds it to be? Though after all, I believe in judicious manuring myself and am trying it care-

fully. It will *pay*, I have no doubt, but I rather think my price per lb. will drop appreciably. Though I am aware that this has not been found invariably to be the case, for various reasons.

"PEKOE."

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contains per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Orders should be booked early for the present crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE,

SHENCOTTAH,

Tinnevely.

COFFEE.

Evils of adulteration.

The British Consul at Mannheim says that the coffee market there suffers also from the enormously increased consumption of surrogates for coffee. They are chiefly composed of malt. These "malt coffees" are slightly malted and lightly roasted barley, sometimes also sugared, and needless to say contain nothing whatever of those properties that render coffee itself so valuable. Roasted sugar-beet mixed with chicory is also widely consumed.

Liberian coffee.

The production of coffee in Liberia is increasing enormously. The coffee exported during the fiscal year, 1896, amounted to 600,000lb., while the exports for the year ended June 30, 1896, amounted to 3,000,000lb. Farmers, merchants, and people generally have turned their attention to coffee growing. While no American ships touch at any Liberian ports, yet more than one-fifteenth of the coffee produced is shipped to the United States *via* Liverpool. Coffee is the largest export.

Price of Liberian in the Straits.

The value of Liberian coffee in the Singapore market has fallen so enormously in the last few years (almost 40%), that the local U. P. A. thinks it about time to find fresh fields and pastures new wherein to dispose of its produce. Certainly the present rates, roughly about 50s. the cwt., seem the reverse of satisfactory. Surely it would pay Straits planters far better to send their coffee home than to sell in the local market, judging from the very respectable prices occasionally fetched by Liberian in London.

Nyassaland coffee.

"Free Lance" writes us:

In *P. O.* of 17th ultimo, I see an allusion is made to a wonderful shade tree "discovered" in Nyassaland that "possesses peculiar properties in bringing round exhausted soils, thereby causing coffee that has been worn out by age and cropping to renew its vitality and again become productive." This is very interesting, principally because it demonstrates conclusively that if there is any truth in the statement, they must have worn out coffee in Nyassaland, a thing that would seem incredible if one believes the ordinary current literature on coffee planting in Central Africa. Nyassaland is a very young country to have worn out coffee, considering there is no leaf disease, and it says uncommonly little for its soil or planters, or

both. I see in a recent issue of the *Madras Mail* that Mr. Cecil Rhodes is going in for coffee planting in Nyassaland. Consider Brazilian expert a *sine qua non*. Without pretending to the omniscience of Mr. Rhodes, perhaps it may not be out of place to suggest that something more than 40/- a cwt. might be expected if he employs an Indian expert.

Change of tastes.

In our Tea Notes we have a paragraph headed "Coffee Ousted," which certainly is of grave interest to all coffee planters. It is nothing less than a declaration on fairly responsible authority, that a beginning has been made in the United States in persuading the great coffee-consuming public to change their beverage to tea. What truth there is in the report we cannot vouch for. But as showing the successful pertinacity of the tea planters in forcing their products down other people's throats, it is worth consideration. From a coffee point of view, we can only hope that the present exceedingly low prices of Brazil coffee will enable it to compete successfully with tea. Anyway it seems more than time to bestir ourselves in our own defence, and crack up coffee as tea-planters do their own product.

The outlook in Brazil.

The introduction of European capital into Brazil for the development of the coffee enterprise will be especially useful in this crisis in the financial position of the country, says the *H. & C. Mail*. The low prices received for coffee have greatly reduced the income, and in consequence of this the balance of foreign payments has become still more heavy against Brazil, and the planters are greatly embarrassed in meeting their obligations within the country. All this helps to diminish commercial transaction in Brazil itself, and in turn reduces the volume of importations. It also cripples national industries and diminishes the demand for labour. The Treasury likewise feels the contraction, for diminished imports and lower prices for coffee lessen the revenue. Last year it is estimated that not less than fifty thousand contos of gold (say £5,000,000 to £6,000,000) were lost to the country by the fall in coffee prices, which reduction will be greatly increased this year by the still lower prices. The increased prices for rubber and sugar will counterbalance this to a small extent, but it is highly improbable that it will reduce the total loss for 1896 to forty thousand contos of gold (say £4,500,000). Under these circumstances the recent large sales of coffee estates to European syndicates may be expected to favourably affect the future of the country.

In praise of the berry.

Dr. Gordon Stables, R.N., is a great advocate of coffee. He writes as follows to a home paper:—

"Nothing that can be said in any way calculated to lead to the rational treatment of one of the most common mental ailments of the age is said in vain. Therefore when new papers take to condemning good coffee, under the fallacious notion that it tends to sleeplessness, it is time for medical men to bring them up with a round turn. There are many forms of insomnia in which coffee does excellent service. A cup of this beverage, if well made and of the best quality, has a marvellously soothing effect on the system. It seems to remove congestion of the brain, and, therefore, positive tends to healthful sleep. There is no necessity to become a coffee drunkard, though I don't think ten cups a day would

part one; and a doctor in France, who still attends his patients, although 103 years old, used to drink forty cups of coffee all day long. A huge urn was constantly simmering over the stove. It calmed and warmed us at the same time, and entirely dispelled the irritation of brain and temper that the extreme cold produced. Spirits had the reverse effect. A doctor of my acquaintance used to drink rum instead. He was confined and frozen, and brought home in the foretop. People who sleep badly at night should try to get a snooze by day in a quiet, darkened room, and unless of unusual idiosyncrasy they will find a cup of black coffee help them materially."

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.,

SOMETIME AGRICULTURAL CHEMIST IN COORG, SOUTH INDIA,
TO MESSRS. MATHESON AND CO.)

(Reprinted from the Madras Mail.)

III.

THE VALUE OF COFFEE MANURES.

II.

BONES, as mentioned in my first paper, have phosphates, i.e., tricalcic phosphate varying from 39.40 per cent. up to 57.08 per cent. and ammonia from 3.01 per cent. up to 5.23 per cent. Taking the cost of standard quality bones on the coast as, say, Rs. 60, then the value of the sample would be as follows:—

	Standard.	Highest.	Lowest.
Phosphates	48%	57.08%	39.40%
Ammonia	4%	5.23%	3.01%
Phosphates at Rs. 3-4	36%	43.81%	29.55%
Ammonia at Rs. 6	24%	31.38%	18.06%
Total Value Rs...	60%	75.19%	47.61%

The buyer pays Rs. 60 for an article that may be worth Rs. 47.61, or it may be worth Rs. 75.19; there is a money value of Rs. 27.58 between the highest and the lowest. Supposing that 4 cwt. of standard quality bones are to be used and the poorest quality are supplied, it will be necessary to use 4 cwt. 3 qr. and 13 lb., nearly 5 cwt., to make the quantity of phosphates equal, while with ammonia to make it up to the standard 5 cwt. 1 qr. and 9 lb. would be needed, so that to make No. 3 equal to the standard it would be advisable to add 30 lb. of 6 per cent. oilcake to the 4 cwt. 3 qr. and 13 lb. of bones, 3rd quality, to bring it up to the equivalent of the standard. With the highest quality the whole is reversed. Roughly speaking, suppose the phosphates value to be set against the ammonia, the proportions required would be highest 3½ cwt., standard 4 cwt. and lowest 5 cwt. That is to get the money equivalent on the basis mentioned, to get the full manurial value, the manures would have to be adjusted in the case of the lowest, by increasing the quantity used and adding some nitrogenous matter to bring up the ammonia. In the case of the highest the addition of a little more burnt earth or cattle manure would reduce it to the standard, the consumer benefiting in the reduced cost of carriage. The question of carriage is of as great importance in the case of bones as it is with oil cake; and a very little consideration will show that it is worth while to secure a first-class article. In England, if the bones are not up to the standard guaranteed, the vendor pays the cost of the analyses and makes an allowance to cover cost of carriage. One large firm of manure manufacturers, in its annual circular issued to the spring of this year, makes the following allowances:—

15s. 0d. unit for ammonia.
3s. 9d. " soluble phosphates.
2s. 6d. " bone phosphate.

The only stipulations of importance are that the surplus value of one element shall be set against the deficit in the others, if any exists, and that they have the right, if they are not satisfied with the analyses, to have a second one made and to strike the average of the results. Steamed bone flour, as it decomposes more easily, is considered to be worth 5 per cent. more than the raw. Physical condition is in most cases and on the generality of soils very important, and is worth paying for, as it means a quicker action where finely divided manures are used. If manuring can only be done on one-third of the estate per year, so that the whole is only manured once in three years, a mixture of steamed bone flour, raw bone meal, with, if necessary, some fish meal and oilcake to supply the extra ammonia would be a suitable manure, as the materials would not all decompose at once nor at the same rate, but would gradually yield up the food to the plants. The proportions should be adjusted to suit the soil, climate, &c. Where possible, I would prefer annual broadcast manuring.

Fish when pure and dry is a very valuable manure; it decomposes more readily than either steamed bones or oil cake. When ground down to meal it is a very powerful stimulant, and must be used with care. The commercial article is often mixed with large quantities of sand. I have examined some that had 80 per cent. in it, but the following analyses show that with care the sand and insoluble need not exceed 2 per cent. All over this should be deducted from the gross weight, and if it exceeds 5 per cent., an allowance should be made to defray expense of carriage. I also give the analyses of two samples by John Hughes, which represent the ordinary article of commerce, where no limit is placed on the amount of sand. Mr. Hughes found as much as 62 per cent. sand in a sample, and he considers No. 1 to be a fair average of the fish usually imported in Ceylon. No. 3 fairly represents the best quality delivered in Coorg, and the supply is practically unlimited. It could be greatly improved by squeezing some of the oil out of it:—

	Hughes.		Pringle.	
	No. 1	2	3	4
Fish Manure.	Whole.		Fish.	Salt Fish.
Moisture	5.24	13.12	13.78	12.32
* Organic matter	31.18	43.40	54.40	62.09
† Phosphoric acid	5.24	8.70	8.22	3.46
Lime	6.20	10.19	17.02	4.54
Alkaline salts, &c.	3.37	5.49	5.35	14.96
Sand	48.77	19.10	1.23†	2.63
	100.00	100.00	100.00	100.00
* Containing nitrogen	4.01	5.84	5.71	4.57
Equal to ammonia	4.87	7.09	6.92	5.54
† Equal to tricalcic phosphate	11.44	18.99	17.92	7.54
‡ Containing common salt				14.75
The value of No. 1 is—			RS.	A. P.
Phosphates	11.44 at Rs. ¾		8	10 0
Ammonia	4.87 at „ 6		30	0 0
Total value			38	10 0
While No. 3 is worth—				
Phosphates	17.92 at Rs. ¾		13	8 0
Ammonia	6.92 at „ 6		42	0 0
Total value			55	8 0

Hughes' No. 2 sample is worth a little more. It is usual to consider a quarter per cent. under or over the whole number a fair allowance for errors in samplings, &c., and to pay on each half per cent. It is a fair give and take arrangement between buyer and seller. Thus 10.5 per cent. is paid for as ten and one half, 10.3 or 10.7 at the same rate, but 10.8 is paid for as eleven and 10.2 as ten.

So far I have dealt with readily procurable native manures, but where carriage is very expensive, it is cheaper to use more concentrated manures which can be diluted with burnt earth, or cattle manure or weed compost or jungle soil as may be thought best. In other cases a heavy crop is on the trees and they are to be backed up. A quick-acting manure must be used to enable them to satisfactorily ripen it, and leave the trees fit for the next one. So with leaf disease or anything else that exhausts the trees, quick-acting stimulants backed up by easily assimilable plant food not only help the trees to recover rapidly but minimise the risk of loss of crop. First let us consider a case where carriage costs, say, Rs. 50 per ton, and 6 tons ammonia are to be supplied:—

100 tons oil cake 6 per cent. at Rs. 6 per unit	...	Rs. 3,600
Carriage of 6 tons ammonia		.. 5,000

Cost of 6 tons on the estate		Rs. 8,600
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Equal per ton of ammonia to		Rs. 1,453
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Ten per cent. oil cake is worth to the planter quite one rupee per ton more than 7 per cent. and a fair price for it would be Rs. 7 per unit ton; 60 tons will give 6 tons ammonia and the cost is:—

60 tons oil cake 10 per cent. at Rs. 7 per unit	...	Rs. 4,200
Carriage of 6 tons ammonia		.. 3,000

Cost of 6 tons on the estate		Rs. 7,200
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Equal per ton of ammonia to		Rs. 1,200
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A saving of Rs. 1,400 by using 10 per cent. at Rs. 7 per unit instead of 6 per cent. at Rs. 6 equal to Rs. 233 per ton of ammonia delivered. Now if 24 per cent. ammonia sulphate costing Rs. 10 per unit ton is used, only 25 tons are required, one-fourth the weight of 6 per cent. oil cake, a consideration of the utmost importance where the manure has to be carried on the heads of coolies:—

25 tons 24 per cent. ammonia sulphate at		Rs. 6,000
Carriage of 6 tons of ammonia		.. 1,250

Cost of 6 tons on the estate		Rs. 7,250
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Equal to per ton of ammonia		Rs. 1,208
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By using the equivalent of 100 tons 6 per cent. oil cake with 10 per cent. a saving of Rs. 1,400 is effected, and with sulphate of ammonia 24 per cent. Rs. 1,350 is saved. Where the carriage is Rs. 50 per ton or less, the 10 per cent. hindy has the advantage over the sulphate in cost. It is, however, so much slower in action that when immediate results are to be produced, the ammonia sulphate is decidedly to be preferred. When the costs are nearly equal, the planter must first consider his trees' requirements, and the suitability of the manure to his working conditions, climate, soil, &c. If it is necessary to assist the trees over a bad attack of leaf disease, which by denuding them of leaf prevents the ripening of crop, quick acting manures are essential, and though costing more per unit ton are the cheapest in the end, as they will often repair the damage before it is too late. They should be carefully backed up so that the first good effects are not lost. Ammonia and lime may be looked upon as stimulants, and, like spirituous liquids, must be used with discretion. A little whiskey or wine often aids digestion, but it is advisable to have something in the stomach to digest, otherwise the results are not satisfactory. So it is with plants; if you give them stimulants you must give them other food to digest; they must have phosphates, potash, sulphur, chlorine, iron, &c., &c.

As regards phosphates we have a wide choice. There are raw bones of varying grades of fineness, steamed bones, and bone ash, mineral phosphates, precipitated phosphate, superphosphate, guanos, and fish. Disregarding the native manures, we will just consider the phosphates, pure and simple. They should be in such a physical condition that they may be easily mixed

with burnt earth, &c. Bone ash and mineral phosphate should be sufficiently fine to allow of at least 90 per cent. passing through a sieve of 80 meshes per linear inch. The amount of phosphates in bone ash, according to Macadam, varies from 62 to over 80 per cent. Pure ox bone ash contains 86.34 per cent. and the average of six samples analysed gave 73.5 per cent. It is usually sold on a basis of 70 per cent. It is much more readily taken up by the plants than raw bones and is an excellent fertiliser where phosphates are required. Of mineral phosphates high class Spanish, commonly called Estamadurite, has from 75 to 82 per cent. phosphates. Inferior qualities are often in the market with only 50 per cent. or so in them. Canadian and Norwegian apatites and Aruba phosphates are generally very rich, having sometimes as much as 90 per cent. tricalcic phosphate. There are a great number of others, but these are most suitable, and I prefer Aruba, as it is as soft and as easily decomposed as bone ash, and is generally cheaper. Precipitated phosphates are in a much more beautiful physical condition than it is possible to produce by mechanical means, and they are almost as valuable as superphosphate, the average percentage of phosphates being about 60 per cent. A high class superphosphate with 44 to 45 per cent. soluble is as a rule worth twice as much per unit as raw bone flour; the physical condition is perfection and the food is at once available for the plant.

Trees bearing a heavy crop suffer from a bad attack of leaf disease. We wish to assist them and determine to apply a complete manure. Cattle manure at once suggests itself. The weather is favourable and it is applied. The trees slowly feel its effects and recover, but there is a good deal of light coffee and some of the crop has dropped. We try bones, oil cake and wood ash. The results are much worse than with cattle manure; the mixture is too slow in action. Next superphosphate, ammonia sulphate and kanite are tried. The trees feel the effect at once and throw out a grand flush of leaf; the beans also fill out in a wonderful manure. If we know the composition of the soil we can proportion the manure to suit it and the plants' requirements, and produce the greatest effect at the least cost. In fact, the value of a manure to the tree or planter depends on the proportion in which the constituents are in it, the fertility and suitability of a soil for a given crop depends on the relative proportion that the easily assimilable elements bear to one another and its physical condition. From this it follows that if there is a proportionate deficiency of any element in the soil that is not supplied by the manure, the results will be the least disappointing. The heaviest loss of value occurs when the manure applied has the same deficiency as the soil. A soil is rich in phosphates and nitrogen, and we feel surprised that bones and oil cake produce no results commensurate with expenditure. Cattle manure does much better, therefore the natural conclusion is that it is the better manure for coffee. Probably the addition of a little kanite would improve the bone and cake mixture; but if it did so, it would also probably also improve the cattle manure, and an analysis of the soil would reveal the fact that the soil was short of perhaps magnesium, chlorine, sodium, potash, or possibly sulphuric acid, and it is quite possible that the kanite alone would have given as good results. If to the cattle manure we add what the soil demands to supply its defects we can manure with the certainty (provided the season is favourable) of obtaining good crops and in bad seasons fair ones and a full return for the money spent on manures.

Soil analyses, such as those given by John Hughes and myself, which show the relative proportion of the elements available for plant food, enable the planter to economise in his manuring by applying the necessary manure, avoiding the application of what is unnecessary, and the disappointment and waste of money attendant thereon. To make manuring a success and to ascertain the value of a manure to him on his estate

nter must consider the following five points:—his Soil; his
duce; Carriage; Capital; and Labour. Without the last
o, manure and manuring are impossibilities, and if the
ply of these two necessities is limited, the planter must cut
coat according to his cloth. If the supply is insufficient a
nter's best efforts are often cramped, and he has to work
en he can, not just when he wishes to, and when he knows
will get the best results. Work well done at the right season
the cheapest in the end, and manure best adapted to the soil
d produce is the most economical to use.

TEA.

the new Travancore
Company.

Thus speaks the *Times of Ceylon*
of the Travancore Tea Estates
Company :

The new company, in which Ceylon men are chiefly interested, has
st been floated, and some additional particulars are given by our
ondon correspondent to those we have mentioned already. Mr.
Mackenzie is the principal vendor, and the members of the
ard of the Ceylon Tea Plantations Company are largely directors
the new company, which, as "A. L. H." says, should benefit the
perintendents of Ceylon's premier tea company. With reserve
nd selling for £3 an acre and tea in cultivation at £39 an acre;
hile it costs only 3½d. to put on boardship tea which sells for 8½d.,
is not strange that Ceylon capital is finding its way to Travancore.

results of manuring. The following facts show what
manuring can do, aided by liberal
ltivation. The jat of tea experimented on is decidedly
t high, while it should be noted that the land has been
ractively lying fallow for some years past, and is a high
levation Nilgiri garden. Half a bushel of cattle per tree
as the dose. The land was partly deep hoed, partly
renched and partly pitted. The maiden flush (tipping)
as 410 lbs. of ¾ acre. Off 7 acres, medium pruned,
225 lbs. leaf were taken, and this with very light pluck-
ng. The land has been hoed twice since, and the
prospects of the next few flushes are excellent.

Reason of glut in
brokens.

It has been frequently pointed
out in these columns that broken
teas have been persistently falling
n price in the London market. This has been partially
explained by the fact that there is no demand for these teas
n the foreign market. The fuller reason is that the direct
export from India and Ceylon to the various foreign markets
s becoming a very important factor in relieving the home
rade of the re-export business. And, as the only teas that
sell outside of the United Kingdom are whole leaf teas, the
proportion of broken teas finding its way home has become
altogether too large for the consumption there. So that
every care should be taken in withering and manufacture to
render the inevitable proportion of "brokens" as small as
practicable. We presume the reason of our foreign customers
disliking broken teas, is twofold. Firstly, that with regard
to the China tea they have hitherto been using, broken teas
are almost invariably adulterated teas. Secondly, that they
find the whole leaf tea makes quite as strong an infusion as
they care for. To young tea-makers we would take the
liberty of suggesting some very simple modes of avoiding
an undue proportion of brokens: wither harder, roll lighter,
and be careful about over-handling your tea either with
sizers or sieves.

Coffee ousted!

The directors of the great Tea
Campaign, now raging all over the
world, have till recently contented themselves with opera-
tions against Chinese and Japanese Tea, and with
phenomenal success. They seem to have gone one better
in the United States, according to Mr. K. Parson's letter
to a Ceylon contemporary, and are converting coffee-drink-
ers into tea-drinkers! This is what Mr. Parson says:

When the consumption of Ceylon and India teas in this country
is talked about, it seems to be understood that tea drinkers are the
only ones that will drink Ceylon tea, and that to reach these it is
necessary to change their tastes from the tea they are drinking at
present to that of Ceylon. But, besides the regular tea drinkers,
there is a large majority who seldom or never drink tea, and I am
convinced that, of these, there are a great number who will become
drinkers of Ceylon and India teas. This has been my experience
during the past ten years, during which time I have, amongst my
private acquaintances, introduced Ceylon tea to those who seldom if
ever drink a cup of tea, and who now use tea where formerly they
used coffee. If the committee, who are engaged in looking after
the planters' interest will bear this in mind they will see what a
future they have before them in this country. As one of my friends
remarked, "Ceylon tea is thicker and supplies the place of coffee to
me, where the tea I formerly drank appeared more like hot water
with a little flavouring in it."

This, with the new tea laws (the gist of which we reprinted
in our last issue) to be introduced, will serve well enough to
keep up the market average to a paying figure.

Tea as an investment.

We do not wish to deprive the
pessimists who are apprehensive
about the stability of tea as an investment of a solitary
lamentation, says the *H. & C. Mail*. They have been telling
us for years that tea is a "risky kind of thing, you know,"
and that it is "overdone," and lately it has been "wait
until China wakes up." But somehow their gloomy fore-
bodings have not been realised. Some people will prophesy
evil on the slightest provocation and out of pure cussedness.
To these the reports of the various tea companies now
appearing must be quite unpleasant reading. With few
exceptions there is a regularity about the result which
must prove as gratifying to the investor as it is
irritating to the croaking fraternity. Tea shares in well-
selected companies are now looked upon by investors,
who formerly ignored them, as worth attention, not
only because the concerns are, as a rule, remarkably
well conducted, but also because the accounts and every-
thing connected with them are presented in a businesslike
way. The professional financier may occasionally take a
hand, but on the whole the industry and all connected with
it are in a wonderfully healthy condition. If tea should be
"overdone," to use the language of the warning voice, or
if the consumption should decline, or if the few other evils
to which all industries are subject should at any time occur,
the position, even then, will not be so black as some would
have us believe. Even the sweet simplicity of Government
securities and Colonial bonds is subject to fluctuation, and
the timid who scent danger at all points will do well to
keep their savings in a stocking.

The market.

It is usual among tea-enthusiasts
to convince unbelievers and outsiders
of the soundness of the tea market, by referring them to
the "average London price" for Indian teas during the
last four years. How can one affirm that the market has
appreciably fallen, they say, in face of the constant figure

averages for India? Yet if one thinks a little, and considers all the facts of the position, the optimistic argument is rudely overturned. It is a very well-known fact that the leaf plucked is uniformly of far finer grade than used to be the case some half-dozen years ago. Consequently the average tea now on the market is of much higher value than formerly, though the average price remains at very much the same level. We are here addressing so called paper experts rather than tea-planters, whose knowledge of the fall in the market is too intimate to be argued over. Or else we could cite dozens of instances of well-known gardens whose teas have steadily fallen in price, despite the utmost care and attention in manufacture, the plucking alone remaining constant; and, notwithstanding the constant assertion of the brokers that fine teas always command full prices, the term "full" must be taken only and in its relative sense, *i.e.*, as compared with the prices of the commoner sorts. Turning to Ceylon the question is even simpler. For these the plucking has remained very much the same as it used to be some four years ago, and the average price of Ceylon tea has fallen. The reason wherefore has been eagerly sought in the Island press, the general impression being the obvious one that the great increase in production has resulted in a very natural fall in price.

PRODUCE AND PLANTING.

Peru and the Tea Trade. As those interested in India and Ceylon tea are always on the look out for new markets, a forthcoming exhibition in Lima, Peru, should attract attention. We see from the *H. & O. Mail* that there is some scope in South America for pushing the sale of tea. That the present Government of Peru is anxious to do all in its power to foster and extend the trade of the country is shown by its action in promoting a permanent Industrial Exhibition, which is to be opened at Lima this summer. In order to ensure the success of the undertaking, a section of the Exhibition Palace at Lima has been set aside specially for it, while the whole of the arrangements are in the hands of the Minister of Public Works. Goods and exhibits from all parts of the world can be shown, and manufacturers in Great Britain are to be invited to send goods, the Government undertaking to admit free for six months all exhibits. Should any of our readers desire to be represented, they should communicate at once with Mr. K. B. Crowe, Consul-General for Peru, 13, King Street, Liverpool.

By the Mail.

The following dividends of tea companies have been declared in Calcutta:—Shakomato Tea Company, $7\frac{1}{2}$ per cent.; Loobah Tea Company, Limited, 8 per cent. Mr. A. Philip, Secretary to the Planters' Association, in a letter to the Ceylon papers on the prospects of Ceylon tea in Russia, states that the quality of Ceylon tea is not what it used to be, and declares that the maintenance of quality is a vital question if the permanent conversion of new markets is the object in view. The Russians still prefer China tea, and it will only be by sheer excellence that Indian producers will be able to supplant the Chinese. The *Ceylon Observer* states that the latest venture is the Oodoowerre Estates Company of Ceylon, Limited, with a nominal capital of Rs. 5,00,000, divided into 1,000 shares of Rs. 500 each. Blairavon

Estate, Maskeliya, has been sold by Mr. W. Blair Brown to Mr. J. Shannon Stevenson for £8,500, and Margherita Estate, Maturata, to Messrs. Fallen and Gregg from Australia. A general meeting of the Lady Havelock Gardens Company, Limited, was held at Colombo recently. The first block of the Lady Havelock Gardens has been purchased from Government, and buildings are to be put up shortly.

Last Week's Tea Market.

At the opening sales on Wednesday, about 14,400 packages were offered, says the *Produce Market Review*, referring to last week's tea sales. The demand was fairly active, which was due in a great measure to the reduction of stocks held by the dealers during the past two or three weeks. Nearly the whole of the teas offered consisted of the medium and lower grades, and for the more useful lots there was good competition at prices quite equal to those current before Easter. As the supply of these better descriptions is now much reduced, present rates will probably be maintained for some little time, but the rise anticipated in some quarters is not likely to occur in the face of the heavy imports of Ceylon. The less desirable sorts, and especially many of the Calcutta bought teas, were comparatively neglected, values being irregular with a downward tendency. The finer kinds were poorly represented in the sales, and as there is only a very limited quantity to come forward, there is every indication of a strong and probably rising market during the next month or two. The large and disproportionate stock of broken tea of most grades has for some time had a depressing effect on prices for these descriptions, but they have now fallen to a point which should attract attention from the trade, as they undoubtedly offer exceptionally good value. The cause of the comparatively small demand for these teas during the past season is attributable to the cheapness of the whole leaf kinds, and to the small and dusty character of a considerable portion of the former. Of the 14,348 packages catalogued for public sales, about 12,700 were sold, and the quantity advertised for next week is much larger. After a fortnight's interval the first sale of Ceylon tea since the holidays was held on Tuesday last, when a large quantity was brought forward. A good feeling prevailed, and notwithstanding the heavy supplies, the market was well supported, the bidding showing more animation than has been apparent for some little time. Teas for "price" were particularly firm, with an upward tendency, and only a limited quantity was to be procured under $5\frac{3}{4}d.$ per lb. Medium Broken Pekoes generally maintained previous rates, as although in some cases a slight reduction was noticeable, no alteration can be quoted. Whole leaf kinds continue in request, and a good business has been transacted in them at about former quotations. The quantity generally is by no means all that could be desired, but the sales contained a larger proportion of good tea than has been the case of late.

Metal Tea Chests.

The metal tea chest industry, represented by the Acme Tea Chest Company, Limited, appears to be in a very thriving condition, says the *H. & O. M.* Under the title of the Acme Tea Chest Company, Limited, a new company has just been formed to take over the business of manufacturing and selling steel tea chests, hitherto carried on by

the Acme Package Company, Limited, together with the premises, plant, machinery, and assets. The prospectus of the new company states that the business of the vendor company has, since its formation in 1894, developed to a remarkable extent, and is still rapidly increasing. The capital of the new company is £150,000 in 50,000 six per cent. cumulative preference shares of £1 each (preferable in regard both to capital and dividend), and 75,000 ordinary shares of £1 each. Of these one-third are to be issued to the vendor company as fully paid in part payment of the purchase price, the remaining two-thirds—viz., 50,000 six per cent. cumulative preference shares and 50,000 ordinary shares—being now offered for subscription. The prospectus states that the company recently acquired a few extensive and very suitable works, with convenient railway connections, at Polmacie, Glasgow, which previously formed the Glasgow Steel Works. These works, having been reconstructed and equipped with special and valuable machinery, are thoroughly adapted to their purposes, and are equal to an output of from 20,000 to 40,000 chests per week. The formation of a new company with larger capital has been resolved upon mainly with the object of putting the company in a position to manufacture its own steel sheets, not only for the sake of the large profit to be earned by so doing, but also to insure an ample supply of high-class steel sheets—the output of chests being now so large that it has been found extremely difficult to buy a sufficient quantity of sheets of the special quality of practically unpuncturable steel which is necessary to make a thoroughly satisfactory metal chest. The prospectus also states that for the season ending June 30, 1897, orders have already been obtained to the amount of £42,000, from which, according to previous experience, a profit of £8,200 should be made. For season ending June 30, 1898, it is confidently expected that the total sales will considerably exceed this figure; but assuming that no increase upon sales is attained, and that the saving before referred to arising from the company manufacturing its own sheets—viz., £4,000—is effected with sufficient expedition to make itself apparent next year, the total profit would, at the same rate as in the previous year, amount to £12,200, sufficient to pay 10 per cent. on the ordinary shares after making provision for the dividend of 6 per cent. on the preference shares.

The Planting Industries of Mexico. At a recent meeting of the Mexican shareholders of the Mexican Coffee Trading and Planting Company, says the *H. & C. Mail*, it was mentioned that there are already 1,500,000 coffee plants in the company's nurseries, which will be ready for transplanting this year; 60,000 one year and a half old trees have been planted, and are in good condition. The American Consul at the City of Mexico says, "That, striking as are the facts with regard to the increase of the cultivation of coffee and the growth in the United States of a great appreciation of the Mexican berry and its sterling qualities, these can be paralleled in many points by the development of Mexican tobacco." Although France has not profited commercially by this increase, it is only simple justice to say that it is due very largely to Frenchmen and to the exiles from Cuba whom they employed. "In a word," says Consul Crittenden, "Mexico is not only one of the coming coffee countries, but is also a coming tobacco

country. Mexico seems to be destined to wear the mantle of Habana in tobacco production, and once secured, it is safe to predict that it will never pass away, for the soil of the tobacco region is so deep as to be practically inexhaustible, being from 8ft. to 20ft. in depth, and in some places even 30ft. Moreover, its extent is probably one hundred times that of the Cuban tobacco region, when we take into consideration the fact that acre for acre the percentage of cultivated land at the present moment capable of producing tobacco of the very highest grade is greater in Mexico than it ever was in Cuba in its best days. We can from this easily see what will be the amount produced in the future. Mexico's resources in this direction are practically so great as to make it certain that it will become rich from its tobacco alone. No doubt the result will be finally to cheapen the Habana cigars, and put them within the reach of all."

PLANTING METHODS IN CEYLON.

WE have several times drawn the attention of our readers to the interesting series of letters that have been appearing of late in the *Ceylon Observer* on the subject of the plucking, pruning and preparation of tea. The correspondence was started with a view to bring to light, if possible, any generally unsuspected and preventible causes of the continuous decline in the price of Ceylon teas. The series having closed, our contemporary ably reviews the information gained in the following words:—

On the question of plucking, the general conclusion at which we arrive is that, while shrewd and experienced planters differ, whether coarse plucking is on the increase or not, being chiefly guided in their opinion by the practice of their several districts, there is practical unanimity that the principal cause of the increase of the coarser qualities of teas, is the extension of estates in the lowcountry. The acreage under tea in the lowcountry has been extending much faster than the hill districts, and as hot steamy places yield quicker and heavier flushes than those at high elevations, there has been a preponderance of teas of the lower qualities as compared with high-grown flavoury teas. Whether that fact supplies a full explanation of the fall in average prices may be doubted. It unquestionably explains the fall to some extent. Among the other causes must be mentioned the undoubted fact that a large number of estates go in for quantity, and the equally undoubted fact that scarcity of labour leads to delayed plucking by which much of the finest flush is lost. The latter fact is not of the planter's own making. Scarcity of labour leads to alternatives—the plucking of fields at longer intervals than one would of choice, and the abandoning of some fields for a season, with the immediate result of estimates running short. It can scarcely be expected that a superintendent would care to incur the latter risk, except under express instructions. It may be as much as his place is worth! Coarse plucking with a view to maintain a high rate of yield is matter of choice; and it has been defended on the ground that it pays. That the system is more remunerative than medium, or even fine, plucking has been denied; but clearly, there can be no hard and fast rule, and the plucking which pays best on one estate or in one district need not necessarily be more paying on another. It is useful, however, to remember that 10,000lb. at 6d. may really leave less to the proprietor than 9,000lb. at 6½d. Against the gross gain—£6. 5s.—must be set the extra cost of plucking, manufacturing, packing and transport of 1,000lb. of tea which may swallow up the whole of the apparent gain. Apart from that, there is the influence to be reckoned on the market of a diminished output and of an improved average quality. A reduction in the outturn of 1,000lb. here and 1,000lb. there can scarcely affect the general average of prices for the whole island: but the reduction of the exports by one tenth, now that they have topped 100 million lb., would mean an appreciable quantity off the market.

The general consensus of opinion is against severe pruning which has been described as hacking, and which, we are glad to learn, finds fewer adherents year by year. It is admitted, however, that at in-

tervals—the longer the interval the better for the bush—there must be a change from light pruning; but experienced planters distinguish between heavy pruning and cutting down or hacking. There is no change in the old belief that the liquor is weak for some time after pruning—the weakness and the duration corresponding to the severity of the pruning. Intimately connected with the influence of pruning is that of manuring, which some writers have stated has the same effect of weakening the liquor. The balance of authority seems to be against this view. Not only so, but also in favour of the opinion that the liquor is strengthened by the greater robustness of the bush which manure induces. This strikes us as the more reasonable view; and our explanation of the alleged debilitating effect of manuring is that that effect is produced, not by the manure at all, but by its unskilful application, causing injury to the feeding roots. The majority of writers deny any evil effect on the flavour of tea by manuring, and claim that a sappy leaf, which a few planters condemn, produces a strong flavoured liquor. However that may be, there can be no question that manuring increases the crop: that preference is felt for bulky manures, if they can be got, over artificial, and that, although the good sense and habits of observation of our planters have protected them from disastrous blunders, a good deal yet remains to be learnt of the needs of our soils and the constituents of manures, before it can be claimed that our tea-fields are receiving the best treatment possible for crop and for flavour.

We now come to the final question of preparation. There is no difference of opinion as to the absolute necessity of ample withering space and the general deficiency in regard to it. A good wither is essential to the manufacture of good tea; and most estates or factories are realising this fact and making adequate provision. On the personal question, opinions seem to be fairly divided—some writers holding that as much care and attention are devoted to manufacture as ever before, while some are very strongly of opinion that the claims of sport are a bar to that earnest, habitual and close oversight of the factory, without which quality gradually deteriorates. Others again think that a more intelligent and better-paid class of tea-makers—preferably Europeans—are called for; but in this climate, continuous work in a heated factory is not what the European would choose; and we see no reason why local talent should not be rendered equal to all factory needs. Of course, there must be strict and conscientious supervision. On the whole, nothing contained in the interesting correspondence we have dealt with is calculated to cast doubt on the soundness and the permanency of the tea industry of the island, and, so far as we can see, it depends on proprietors and superintendents whether it shall take front rank in the competition with other countries. We should not despise the aid of science; we should not be above attention to the details of work, whether in field or factory; and, provided our labour supply does not fail us, we need be in no fear of overproduction or of fluctuating exchange, though these may incommode tea, off and on, as they do all Eastern enterprise and chiefly agricultural enterprises.

DIGESTED TEA NOTES.

IV.

PLANT CONSTITUENTS AND NUTRITION.

I SHALL find it more difficult than usual to present the contents of this chapter in an interesting and clear form. In truth, as the first part deals only generally with tea, and is consequently common to agriculture generally, I shall be as brief as may be in my remarks.

All plants consist of 14 elements, four of which are organic, and the remaining inorganic. The most important, and practically the only ones to be considered—being those frequently exhausted in soils—are: nitrogen, phosphoric acid, potash and lime.

Nitrogen.

This occurs free in the atmosphere of which it forms $\frac{4}{5}$, and combined as ammonia and nitric acid. Certain leguminous plants possess the power of fixing the free nitrogen of the air by the aid of certain bacteria in their root nodules. Certain soils also have the same power of fixing this free nitrogen by means of soil bacteria. Small quantities of combined nitrogen, in the form of nitric acid

and ammonia, are given to the soil by rain. This rarely exceeds 4 to 5½ lb. nitrogen per acre, even in the tropics.

Tea, not being a leguminous plant, must depend for its store of nitrogen on the organic matter (decaying vegetable and animal matter) in the soil. The nitrogen in this organic matter cannot be used by plants until converted, first into ammonia and secondly into nitric acid. Both these changes are due to certain organisms in the soil, which can only thrive under certain conditions: warmth, moisture and air; also the presence of lime. Frequent cultivation is thus of great use in adding to the fertility of the soil. Though on peaty soils, there is a danger of the easily soluble nitrates of lime being thus slowly lost by reduction to nitrogen gas and nitrous oxide; this loss is caused by different species of bacteria. It is evident that nitrefaction, i.e. conversion of useless organic matter into plant-food, takes place chiefly on the surface. The importance of nitrogen to tea may be shown by the fact that the nitrogenous compounds comprise nearly one-third of the prepared tea.

This process of enrichment of the soil goes on most rapidly in fairly dry, warm weather. If such a period is followed by excessively heavy rains, the tea roots, deep and wide though they penetrate the soil, cannot take up the soluble nitrates fast enough. This results in a serious loss to the soil. Mr. Bambo, doubtless having no experience of the steep soils so common in South India, fails to point out a lesson to be learnt, i.e., the importance of so draining and cultivating the soil that the major portion of the rainfall should soak through, instead of flowing over, the surface of the soil.

To render my meaning clearer: rain water flowing rapidly over the surface must take with it a large percentage of the soluble nitrates into the drains. These again convey them to the rivers, the loss being thus irreparable. The fewer the drains, the less time the surface water will have to soak in the soil. Numerous drains at gentle gradients, say 1 in 40, would result in a very slow escapement, the nitrates being allowed time to soak in the soil, a large proportion being subsequently recovered by the deep water-roots of the tea-plant.

Humus.

Closely allied to and frequently mistaken for, nitrogen is humus, i.e. decaying vegetable matter. The value of humus depends almost altogether on the nitrogen it contains, which varies in peat from 1% to 4%. Until converted into nitric acid, tea can make no use of the organic nitrogen. The process of conversion has already been described. Peat soils are frequently acid, and thus dangerous to apply without previous aeration.

Potash and soda.

Potash forms nearly 40% of the mineral constituents of tea. In its usual form it is insoluble, but frequent cultivation and addition of humus converts it into available plant food. Clay soils are usually richest in potash, but sandy mica soils are also very rich in the mineral.

Lime.

This forms about 7% to 8% of the ash, but does not seem to be of special importance to tea. Abundance of lime tends to increase the seed-bearing, but retards the flush. In moderate quantities it does much good in sweetening the soil and rendering soluble inert forms of plant food.

Magnesia.

Of indeterminate value, usually present in all tea soils.

Iron.

Is essential to all plants, but is found in all soils in abundance. Its lower form, i.e., iron with a minimum amount of oxygen in combination, is distinctly poisonous. The blue or pale yellow colour of some subsoils is due to these poisonous oxides; after cultivation the colour is changed to dark yellow or red.

Phosphoric acid.

This is second in importance only to potash, forming 12 to 16% of the ash of tea. In fact, as soils are usually far poorer in soluble phosphorus

potash, it is generally recognised that in manuring, phosphates should rank before any of the other minerals.

NUTRITION.

This section is written in a very technical style, and I shall describe only those points a practical planter can seize of. To begin with germination. This requires air, heat and moisture; light is not needed. The moisture penetrating the seed envelope together with the oxygen of the air, ferments the starchy contents of the cell, and forms a strong solution thereof. This solution converts the starch in the cells into soluble sugar. This new solution passes through the other cells, causing them to distend, new cells being formed, and the root and first shoot emerge from the seed. When the first true leaves have formed, the food supply of the seed is generally exhausted, so that the plant has to rely on the soil and air for its future development. The whole variety of vegetable products in the vegetable cell are produced from the carbon of this carbonic acid, with varying proportions of oxygen and hydrogen from water, of nitrogen from ammonia, and of sulphur from sulphuric acid, together with phosphates, alkalies and salts.

Of the non-nitrogenous compounds, carbonic acid and water only are required for their formation without the addition of ammonia. The first products formed are probably the least complex organic acids, like tannic and boheic acids.

The next group are the neutral carbo-hydrates [in other words combinations of carbon (charcoal) with water], such as cellulose, sugar and gum. Then come certain volatile oils and acids; then resins, and finally the volatile essential oils.

The first compounds contain a very large proportion of oxygen. This element decreases gradually until the last stage, where, as the volatile essential oils, it is altogether absent.

The flavour and "body" of tea depending on the presence of the aromatic resins and essential oils, it is obvious that in very thick flushes, sufficient time for their development is not allowed. This is borne out both by practical experience and chemical analysis.

For these changes to take place, the plant must be of course well supplied with all the mineral matter and other food necessary for its growth, and time must be allowed. Chemical changes are of course most active in the youngest shoots, and these contain the most concentrated sap in the plant.

THE U. P. A. S. I. FAMINE FUND.

THE EDITOR,
Planting Opinion.

DEAR SIR,
I shall esteem it a favor if you will find space for the inclosed list of contributions to the Indian Famine Charitable Relief Fund, Madras Branch, received by the U. P. A. S. I. and paid over to the Hon. Treasurer of the Famine Fund up to the 26th instant.

In some cases, the details now given have not appeared in the lists published on behalf of the I. F. C. R. F., only the gross amounts remitted by various District Associations having been mentioned; in one instance, certain unimportant errors were made in the particulars furnished to the Hon. Treasurer of that Fund, and the present list puts these right.

Thanking you in anticipation,

I am, dear Sir,

Yours faithfully,

HARRY ORMEROD,

Secretary.

UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA, MADRAS, 28th May, 1897.

THE U. P. A. S. I. FAMINE FUND.

COLLECTIONS UP TO 26TH MAY 1897.

	RS. A. P.	RS. A. P.
PER NELLIAMPATHI PLANTERS' ASSOCIATION—		
J. C. Abbot	25 0 0	
"Mallundy"	25 0 0	
W. A. Gilbert	5 0 0	
A. Burnes	5 0 0	
		60 0 0
PER LOWER PULNEYS PLANTERS' ASSOCIATION...		
		25 0 0
PER SOUTH MYSORE PLANTERS' ASSOCIATION...		
		486 0 0
PER COORG PLANTERS' ASSOCIATION		
		605 0 0
PER WYNAAD PLANTERS' ASSOCIATION		
		1,195 0 0
PER KANAN DEVAN PLANTERS' ASSOCIATION—		
H. G. Layard	20 0 0	
A. H. Sharp	50 0 0	
A. F. Martin	19 14 0	
R. F. Russell	25 0 0	
Hugh E. Tollemache	20 0 0	
		134 14 0
PER NORTH MYSORE PLANTERS' ASSOCIATION—		
J. F. Parton	10 0 0	
W. Pilkington	20 0 0	
W. Maxwell Maynard	10 0 0	
W. H. Maynard	10 0 0	
B. Cayley	50 0 0	
F. Dundas	10 0 0	
D. A. Macmillan	10 0 0	
T. N. C. Seton	10 0 0	
E. C. Bolton	10 0 0	
G. L. Delacherois	10 0 0	
A. Sympathiser	10 0 0	
O. Scot-Skirving	20 0 0	
D. O. Allardice	10 0 0	
		190 0 0
PER CENTRAL TRAVANCORE PLANTERS' ASSOCIATION—		
G. L. Acworth	200 0 0	
H. W. Baker	25 0 0	
H. J. Blandford	10 0 0	
L. W. Crawhall	10 0 0	
S. M. Dighton	25 0 0	
J. Finch	15 0 0	
R. H. Goldie	25 0 0	
R. S. Imray	25 0 0	
L. G. Knight	5 0 0	
B. Laurie	25 0 0	
C. Lance	15 0 0	
N. MacGowan	10 0 0	
Mrs. Munro	10 0 0	
F. M. Parker	25 0 0	
J. Place	10 0 0	
D. Tollemache	10 0 0	
A. E. Veale	15 0 0	
Hon. V. B. Wilbraham	30 0 0	
J. Wood	20 0 0	
J. E. Sealy (hon. member)	35 0 0	
		545 0 0
PER NILGIRI PLANTERS' ASSOCIATION—		
Hon. Mr. Hodgson	200 0 0	
W. Rhodes James	200 0 0	
C. E. Martyn	50 0 0	
W. Rowson	25 0 0	
E. G. Windle	20 0 0	
W. L. Edmiston	25 0 0	
E. R. Kindersley and G. Compton	20 0 0	
Thomas Murray	10 0 0	
Coonoor Planter	5 0 0	
R. E. Gompertz	2 8 0	
J. G. Vernede	2 8 0	
G. and W. Oakes	20 0 0	
A. N. Groves	50 0 0	
R. E. Gompertz	5 0 0	
J. G. Vernede	5 0 0	
"Woodlands" Estate	150 0 0	
Mr. and Mrs. Harding Pascoe	80 0 0	
B. A. Marden	50 0 0	

HYDROCELE & ASTHMA. Instant relief! Permanent cure guaranteed or the Price (Rs. 5) refunded. Don't despair even if in the last stages. Apply to—MANAGER, V. C. WORKS, Ranaghat, Bengal.

	RS.	A.	P.	RS.	A.	P.
F. T. F. Wilson ...	10	0	0			
R. Congrave ...	5	0	0			
James Stanes ...	100	0	0			
A. H. Gerrard ...	5	0	0			
Anon. ...	0	4	0			
F. T. Fellowes-Wilson ...	50	0	0			
Major-Genl. C. H. Wilson ...	100	0	0			
A. M. Kinloch ...	22	8	0			
O. W. Marden ...	30	0	0			
Frank N. Groves ...	25	0	0			
H. D. Wilbraham ...	25	0	0			
Mrs. A. Molver ...	60	0	0			
M. R. Ry. Dod Mootha Moodelliar ...	10	0	0			
A. C. Griffin ...	5	0	0			
W. A. Cherry ...	20	0	0			
Col. and Mrs. Byng ...	25	0	0			
R. M. Galloway ...	50	0	0			
F. R. Griffiths ...	10	0	0			
R. T. H. Griffiths ...	25	0	0			
H. T. Stanes ...	30	0	0			
L. C. Liebenrood ...	25	0	0			
J. P. Coot ...	10	0	0			
H. Atkins ...	10	0	0			
G. and W. Oakes ...	10	0	0			
E. D'Rozario ...	2	8	0			
				1,585	4	0
G. E. Oliver ...				100	0	0
Geo. Salmon, Pykara ...				50	0	0
Louis J. Creed, Pulneys ...				50	0	0
T. Milne ...				50	0	0
H. G. Bonner ...				10	0	0
G. R. Moore ...				100	0	0
J. G. Hamilton ...				100	0	0
Frank Clifford, Sallebile ...				20	0	0
H. W. Leeming, Ercaud ...				20	0	0
C. H. Browne, Sallebile ...				10	0	0
J. Chas. Large, Ercaud ...				20	0	0
H. G. Arnold ...				20	0	0
Mrs. C. Courpalais, Kulbutty Estate, Mysore ...				100	0	0
				Rs. 5,476	2	0

HARRY ORMEROD,
Secy., U.P.A.S.I.

DISTRICT ASSOCIATIONS.

NILGIRIS.

PROCEEDINGS of the Annual General Meeting, held at the Masonic Hall, Ootacamund, on April 28th, 1897. Present: The Hon'ble Mr. H. Percival Hodgson, Messrs. H. Sheldrick, W. Hamilton, G. Oakes, H. D. Wilbraham, J. Stanes, Alexander, L. W. Grey, A. N. Groves, J. Hughes, F. W. Groves, W. Mullaly, F. T. Turpin, J. Harding Pascoe, J. T. Fellowes Wilson, E. R. Kindersley, L. C. Liebenrood, W. L. Edmiston, A. M. Kinloch, W. Rhodes-James, A. S. Cowdell, G. Romilly, (Visitor) J. H. A. Tremenheere (Honorary Member), C. A. Mackenzie (Visitor) and E. C. Windle, *Honorary Secretary*.

1. Read proceedings of the last meeting.
2. The Honorary Secretary read his Annual Report.

ANNUAL REPORT FOR 1896.

Mr. Chairman and Gentlemen,—Owing to the resignation of the late Honorary Secretary, Mr. W. L. Edmiston, who has worked long and ably in your service, it falls upon me to make the Annual Report for 1896.

During the past year five members retired from and two joined the Association, which therefore numbered at the close of 1896 68 members. Three new names have been registered since January and our total number is now 71.

	Accounts.	RS.	A.	P.
The Association began the year with ...		697	12	6 to its credit.
and received during 1896:				
Estate Subscriptions ...		921	0	0

	RS.	A.	P.
Interest ...	16	8	3
Sundries ...	6	10	0
Individual Donations and Subscriptions to U. P. A. S. I. ...	542	0	0
Total ...	2,183	14	9

Expenditure was as follows:—			
N. P. A. Donation to U. P. A. S. I. ...			125
Delegates' expenses to U. P. A. S. I. ...			200
Individual Donations and Subscriptions to U. P. A. S. I. ...			530
Coffee Stealing Rewards ...			70
General Expenses ...			382
Total ...	1,307		7

Leaving a balance in hand of ...			876
			2,183

The balance in hand is composed of U. P. A. S. I. Funds.			12
Coffee Stealing and Reward Fund ...			263
N. P. A. General Fund ...			600
Total ...	876		7

I should mention that no annual subscription to the U. P. A. S. I. appears in the year's account, that for 1895-96 having been paid November 1895 and that for 1896-97 in March, April 1897. The accounts, which have been audited by Messrs. Turpin and Cherrington, are laid on the table.

During the past year the commission of enquiry appointed by the Government of India began and concluded its sittings. The conclusions at which it arrived, and the action which will be taken by the Government, are matters in which all must take the deepest interest and we anxiously await the result. The U. P. A. S. I. held its Annual Meeting at Bangalore on August 17-20. The many subjects of interest discussed will be familiar to you all from the reports in the papers. What immediately interests us financially is that the subscriptions of all Associations were raised 50 per cent so that we now contribute Rs. 375 annually instead of Rs. 250. Of individual donations and subscriptions to the U. P. A. S. I. Fund including the Rs. 542 shown in 1896 accounts, Rs. 727 have been received from members of this Association up to end of March and a considerable amount more is promised. All sums received together with the N. P. A. subscription of Rs. 375 for 1896-97, have been forwarded to the Secretary, U. P. A. S. I. As the question of individual membership of the Central Association will come for discussion at their meeting, I will not touch upon it here.

Act XIII. of 1859 has been more troublesome than ever, and seems probable that it may shortly be rendered entirely useless so far as planters are concerned. In such a case, however, every planter in S. India will reasonably expect that the void shall be filled by special and more suitable legislation.

Famine subscriptions have been general, and in response to an appeal from the Chairman of the U. P. A. S. I. we have assisted this movement, not as an Association, but individually. The total sum raised up to the end of March and forwarded to the Secretary, U. P. A. S. I., was Rs. 1,412-8-0. We may, I think, congratulate ourselves on the increased attention shown by Government to planting interests, due no doubt to some extent to our having a Governor who has ably administered a Planting Colony, but also greatly to our own union, which has given the planters of S. India a representative assembly and a voice to make known their wants. Besides the commission of enquiry, we have to thank Government for stopping further extension of its Cinchona plantations and for authorizing the local purchase of bark; for applying for the appointment of a Medical Officer to enquire into the transmission of Malaria by the Mosquito; for its enquiry into the effect of sugar bug and introduction of lady-birds, and for its action in the matter of internal boundaries on estates. And it is not out of place for me to cordially acknowledge the interest evinced in planting matters and the care shown for planting interests by our valued Honorary Member, the Collector of the Nilgiris.

The past season has been a bad one for all planters. The long severe drought caused great damage to both tea and coffee. In the case of coffee, outturn both of cherry and parchment was seriously affected. In some cases 100 bls. cherry gave only 25 bls. parchment instead of about 50 bls. and parchment outturns commonly ran over 100 bls. to the ton, estimates on an average being 20 per cent. to 30 per cent. short. Quality, as might be expected, was generally inferior, but prices, though not high as they were when the first shipments reached home, were kept at a good level. I may mention that one large estate, though its produce was no better in appearance and quality than that of many others, obtained exceptional prices on account of the good liquoring quality of its coffee. From the sums paid during the year for coffee property, it is evident that its value has increased rather than diminished, and the area under cultivation has been greatly enlarged, chiefly by natives, whilst to a minor extent Europeans have followed their example. Black bug came on very severely in some parts of the district, but was speedily followed by a white scale which has hitherto escaped general observation, but which we have since noticed in places many miles apart. Its effect on the rubber was to completely destroy it by hermetically enclosing it. Leaf blight was prevalent in January and February on many estates, but has not yet entirely disappeared; I should call it the worst attack we have had for quite three years. With regard to tea, the prolonged drought was against free flushing. This, however, was to a certain extent compensated for in the last six months of the year, the rainfall during that time being fairly well distributed. Estimates were hardly realized, and prices in the London market towards end of year showed a decline, the average price of Indian tea sold in Leicesters Lane during 1896 being 8½d against 9d in the previous year, and the Nilgiri price being slightly under the average Indian rate. Brokers report that the Nilgiri teas are lacking in the flavour which was their distinctive characteristic, and this can probably be traced to the heavy pruning which is more general now than formerly. Exchange in 1896 averaged 1-2 13/32 against 1-1 20/32 in 1895. Cinchona planters are to be congratulated on the Government order authorizing local purchases of bark. I may mention that Mr. King, in Calcutta, is also buying, having doubtless been similarly authorized by the Government of India.

Increased police supervision has been provided at any rate in some parts of the district; in others I am assured that it has been less than usual.

Roads and communications have generally been maintained in good order, and in some places were noticeably improved during the year.

In conclusion, I beg to place my resignation with those of the Committee in your hands.

E. G. WINDLE, *Honorary Secretary.*

Proposed by Mr. Edmiston and seconded by Mr. Wilson that the report be adopted.—Carried.

III. The accounts for 1896 were passed by the meeting (having been audited by the two members appointed as auditors).

IV. Mr. E. G. Windle was elected Honorary Secretary for the current year.

The following Committee were elected:—

The Hon'ble Mr. H. P. Hodgson, Messrs. H. Wapshare, H. Sheldrick, L. W. Grey, J. Harding Pascoe, F. T. Turpin, R. Buchanan, A. G. Nicholson, W. L. Edmiston, Rhodes-James, T. Wilson, Eduljee, Murathachellum Mudelliar, H. D. Wilbraham, Fakir Mahomed, L. C. Liebenrood and W. Mullaly.

V. Act XIII. of 1859.—It was resolved that Mr. Rhodes-James' proposal, as follows, should be adopted. "That a form of agreement for general use by planters be drawn up by a legal authority as soon as the question of jurisdiction has been settled by the High Court."

(i) Read correspondence between the Hon'ble Mr. Hodgson and the Chairman, U. P. A. S. I.

(ii) Counsel's opinion on Act XIII. of 1859 was circulated.

(iii) Read Honorary Secretary's correspondence with Honorary Secretary, Wynaad Planters' Association, re form of agreement to come under Act XIII. of '59.

(iv) The Hon'ble Mr. Hodgson spoke on the subject.

VI. Famine Fund.—Read statement of accounts, showing balance received and forwarded to Secretary of the U. P. A. S. I. of Rs. 1,412-8-0 (to end of March 1897).

VII. Individual Membership of U. P. A. S. I.—Read circular

from Secretary, U. P. A. S. I., giving details of proposed scheme. Messrs. Hodgson, Rhodes-James, Romilly, Windle and Edmiston spoke on the subject. The feeling of the Association was taken on the question of individual membership, and was decidedly against it, only three votes being recorded for such membership.

VIII. Upkeep of internal boundary stones.—Read Board of Revenue Order, and provisions added to Section 14 of the Madras Survey Bill on April 10th, 1897. Recorded with satisfaction.

IX. Cattle Trespass Act of 1871.—Read Section 26 of Act and Notification No. 431, dated 19-11-91. The Collector intimated that this section only referred to such grounds as existed in 1893. The following resolution was proposed by Mr. Windle and seconded by Mr. Rhodes-James: "That the Collector be asked to extend the above Notification to all grounds now existing in the Nilgiri District." Carried unanimously.

X. U. P. A. S. I. Jubilee Address to the Queen Empress.—Read circulars from Chairman, U. P. A. S. I., dated 18-2-97, and 12-4-97; the Honorary Secretary intimated that he had collected from members of this Association Rs. 63, which he had forwarded to the Secretary, U. P. A. S. I.

XI. Engineering Workshop in the Nilgiri District.—Mr. J. Metford Thompson's proposal to establish a workshop in conjunction with a qualified Engineer was considered satisfactory.

XII. Purchase of Cinchona Bark by Government.—Read U. P. A. S. I. circular, dated January 29th, 1897. Recorded with satisfaction.

XIII. Adulteration of Coffee and Tea.—Extracts from report of Select Committee on food products and adulteration were circulated.

XIV. Read Mr. Turpin's resolution—"That in view of the large numbers (nearly 100,000) on relief works in Famine Districts of the Madras Presidency, Government be asked if they will encourage coolies to migrate to estates and defray their expenses to their destination, thereby effecting a considerable saving to Government itself, and conferring a benefit on planters in need of labour; and that a circular be addressed to all Proprietors and Managers enquiring:—(1st) How many able-bodied labourers they are prepared to engage at advance of some small amount per head (men or women) landed on the estate, and for what period of time they will undertake to give such coolies regular employment at the rates prevailing in the locality."

Mr. Edmiston seconded this resolution and Mr. Windle spoke in favour of the scheme, mentioning that he had spoken to several Members of the Association and had elicited that many hundreds of coolies would be given employment at once, if available. Messrs. Tremeneheere, Mullaly and Edmiston also spoke on the subject. Mr. Edmiston proposed "That a Sub-Committee composed of Messrs. Nicholson, Turpin, Rhodes-James, and the Honorary Secretary be appointed to arrange this matter." Seconded by Mr. Wilbraham.—Carried.

XV. Elect Delegates for the U. P. A. S. I.—The Delegates elected were The Hon'ble Mr. H. P. Hodgson and Mr. Windle. Proposed by Mr. Rhodes-James and seconded by Hon'ble Mr. Hodgson, "A hearty vote of thanks to Mr. Edmiston for his long and valuable service to this Association."—Carried unanimously.

A vote of thanks to the chair terminated the proceedings.

PAPERS LAID ON THE TABLE.

Agricultural Ledgers Nos. 23, 35, 39, 40 and 41. Agricultural Series, No. 5.

Act XIII. of 1859 with rulings, etc., etc., 2nd Edition. Papers re Jadoo Co., Limited.

Proceedings of N. Mysore Planters' Association, March 1st, Annual General Meeting.

Do S. Mysore Planters' Association, March 4th and 5th, Annual General Meeting.

Do Central Travancore Planters' Association, Annual General Meeting.

Do Wynaad Planters' Association Annual General Meeting, January 6th.

Do do Planters' Association General Meeting, March 3rd.

Do Coorg Planters' Association General Meeting, March 3rd.

Do Shevaroy Planters' Association General Meeting, January 11th.

Do do do do January 26th.

(Signed) W. RHODES-JAMES, *Chairman.*

(") E. G. WINDLE, *Honorary Secretary.*

THAT MASTERFUL YANKEE.

THE writings of Mark Twain are full of instruction as well as humour. Possibly you have read that wonderful story of his called "A Yankee at King Arthur's Court." The hero is a skilled mechanic, the foreman of a great factory in America. He is accidentally killed, as we would say; but, instead of getting his body deposited in the grave, as happens to the most of us, he comes to life again, and finds himself at the Court of King Arthur in England in the sixth century, 1,300 years before he was born. That was a time of deep ignorance and superstition; people were but children then. So with his knowledge and his nineteenth century training he soon becomes master of everybody and everything. He controls the Government and runs the whole country—exactly as a college professor would be superior to all the children if he should take it into his head to join a class at a parish school. Now let us see what this idea may mean to you or to me.

In the autumn of 1873 Mr. James Murphy, of 49 Townsend Street, Dublin (present address 5, Synnott Row, Synnott Place, Lower Dorset Street) had a severe attack of rheumatic fever and was under treatment at the Sir Patrick Dunn's Hospital for three months. Then he left the hospital, but not the man he was before the disease fell upon him. Afterwards he was never free from it. For a while he would be comparatively well, then down on his back again. It would depend on the weather and other circumstances, you see.

Of his worst times he speaks in this way: "My ankles and feet were hot and painful, and would often swell to three or four times their natural size. Occasionally the pain extended to the hips, and I had to be swathed in wadding from the thighs down to the ankles. In this way—now able to get about and now confined to my bed—I suffered for over seventeen years. The joints of my fingers and toes became displaced, or seemed to be so."

We don't need to point out what a cripple this sort of thing makes of a man. If he were wounded and torn in battle or by machinery he couldn't be worse off. Yet the number of people thus disabled is immense, and while rheumatism is peculiarly the disease of adults and old persons, the young (even children) do not escape it. If the disease were only understood—but let us not get ahead of our story.

"At Christmas, 1890," continues Mr. Murphy, "I had a dreadful attack, and was confined to bed for seventeen weeks."

This took him clear through the rest of the winter and one month of spring up to the first of May. What a dreary, miserable season it must have been! There is no merry Christmas or jolly coming of the buds on the trees for a man in that situation. Still, it might have been prevented if he had known then what he found out later.

"All this time," he goes on, "I was in the greatest agony. I couldn't move myself in bed, and finally got so bad I couldn't lift my hand to my mouth, and had to be fed like a baby. Night after night I got no sleep, and often wished myself dead. As for work, I thought I should never do a stroke again. The doctor who attended me gave me medicines, but I seemed none the better for them. I had long since lost all faith in rubbing oils and embrocations; I had spent pounds for them without benefit."

"One day, whilst still suffering great pain, I came upon a book telling how cases like mine had been cured by Mother Seigel's Curative Syrup. Not knowing what else to do I bought a bottle of Mr. Mannin, the chemist in Brunswick Street. After taking this medicine a day or two I had less pain, and I was able to leave my bed, and fourteen days later I had not an ache or a pain of any kind, and got back to my work. Since that time—now two and a half years ago—I have had no return of my old complaint. I never felt better in my life than I do now, and I thank God that I ever heard of Mother Seigel's Syrup. You are at liberty to publish my statement. I have been in the employment of Mr. Robinson, coal merchant, for the past ten years. Yours truly, (Signed) James Murphy, Dublin, June 23rd, 1893."

The mysterious American at King Arthur's Court was powerful because of his knowing what nobody else knew. Had Mr. Murphy known years before that rheumatism is caused by impurity of the blood, and that Mother Seigel's Curative Syrup cures it, he could have defied and banished that agonising ailment. We print these facts in order that his present knowledge may also be everybody's knowledge.

Planters' Library.

The Wynaad and the Planting Industry of South India
By "Francis Ford," Re. 1.

Apply to Messrs. J. B. Ferguson & Co., Colombo, Ceylon
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" and its Enemies, Nietner revised by Green	1 4
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Cotton in Ceylon, Hon. W. Mitchell	0 8
Chemical Analyses, Ceylon Manual, Cochrane	3 8
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" Cult. in Ceylon	0 6
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Apply to Messrs. Higginbotham & Co., Madras, for the following books:—

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Price Rs. 100 per Maund. A guarantee of 80 $\frac{0}{100}$ good seed delivered at Goalundo.

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Bamgaon		"	Majuli	"	"
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			Dijoo Valley	"	"
			Seconee Tea Estate.	"	"
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			Panbarry Tea Estate.	"	"

Also several Gardens in the Duars.

N.B.—The whole of the 1897 crop is booked.

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BORJULI POST OFFICE, ASSAM.

Calcutta Agents:—MESSRS. DUNCAN BROS. & Co.,
14, CLIVE STREET.

MARKET SUPPLEMENT.

SATURDAY, MAY 29, 1897.

COFFEE.

R. J. Rouse & Co.'s Weekly Coffee Report (May 7, 1897) says:—A firm tone has again prevailed at Public Sale and the large quantities brought forward met a good demand at fully previous rates.

Over 4,500 bags East India were offered and attracted keen competition, the greater part being disposed of at 1/- to 2/- advance.

In spite of the heavy supplies of Central American catalogued prices have been well maintained except for common qualities which are rather easier.

Futures have continued quiet during the past week with only slight fluctuations and quotations are entirely unchanged since our last.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending May 5th, 1897, says:—Bank rate $2\frac{1}{2}\%$. Bombay Exchange closes at 1s $2\frac{1}{2}$ d. Brazil Exchange $7\frac{1}{2}$ d. Rupee paper $3\frac{1}{4}\%$. 63 $\frac{1}{2}$. Silver 27 $\frac{1}{2}$ d per oz.

This market has been steady throughout the past week: the full supplies at auctions continue to be well competed for at previous prices, especially the better kinds. At the close the tone is somewhat quieter, and the cheaper kinds more difficult of sale. Brazil markets are quiet but firm.

Daily receipts have averaged 6,286 bags in Rio, and 5,143 bags in Santos.

Futures, owing to smaller receipts of the past few days, and the absence of further favorable reports, have been steady, and close quiet at an advance of 1s to 1s 3d, viz.:—Good average Santos in Havre, May delivery closes at fcs. 49.25, in Hamburg pf. 40, and No. 7 low ordinary Rio in New York \$7.50.

To-day's London official quotations are:—

	May	July	Sept.	Dec.	March
Rio	38/9	—	39/6	40/—	—
SANTOS	39/9	40/—	40/6	41/—	41/6

We quote:—

Ceylon, mid. to good mid. 101/@115/	Costa Rica, mid. to fine... 82/ @108/
Do. small to low mid. 88/ „ 101/	Do. ord. to low mid. ... 64/ „ 81/
East India, mid. to good mid... 91/ „ 103/	Jamaica, good to fine ord. 57/ „ 68/
Do. small to low mid. 82/ „ 90/	Do. greenish to fine color... 75/ „ 120/
Guatemala, mid. to fine... 79/ „ 102/	African ... 32/ „ 34/
Do. good ord. to low mid... 67/ „ 78/	Columbian, ordinary ... 58/ „ 62/
Salvador, good ord. foxy greenish... 64/ „ 65/	Do. good ord. to low mid... 64/ „ 78/
	Do. mid. to fine... 79/ „ 96/

Receipts in Brazil compare as follows with previous years:—

	1896-97. Bags.	1895-96. Bags.	1894-95. Bags.
Rio	3,171,000	2,065,000	2,349,000
SANTOS	4,764,000	2,805,000	3,764,000
	7,935,000	4,870,000	6,113,000

Auctions:—

44 casks and tierces 75 barrels and bags Plantation

Ceylon	...	@ 88/	@ 121/
4,650 bags Mysore	...	82/	116/
749 bags Coorg	...	77/6	113/
5,951 bags 400 bags Neilgherry	...	82/	106/6
East India	...	86/6	102/6
99 bags Travancore	...	87/	95/
14 bags Wynaad	...	75/6	86/6
39 bags Peermade	...	50/	103/6
2 tierces 573 barrels 72 bags Jamaica, part sold...	...	60/	107/
10,739 bags Costa Rica	...	62/	106/
5,681 bags Guatemala	...	64/6	84/
876 bags Salvador	...	61/	65/6
1,050 bags Nicaragua, part sold	...	54/	94/6
160 bags Mexican	...	84/	104/
215 bags Vera Paz and Coban	...		

1,265 bags Columbian	...	@ 58/	@ 82/
198 bags Central American	...	60/	89/
1,032 bags Venezuelan bought in.	...		
31 bags Grenada	...	69/6	
191 bags Guayaquil withdrawn.	...		
6 bags Sanchez bought in.	...		
33 half-bales Mocha bought in.	...		
24 bags Liberian Ceylon bought in.	...		
137 bags Liberian withdrawn.	...		
Landed last week 1,438 tons.	Deliveries	976 tons.	Stock 13,763 tons
Do. last year 1,619	„	1,161	„ 12,469

BRAZIL.

Stocks 30th April.

	1897.	1896.
Rio	240,000 bags	74,000 bag
Santos	411,000 „	97,000 „
Total	38,350 tons	10,060 tons

Receipts 1st July, 1896, to 30th April, 1897.

Rio	3,149,000 bags.
Santos	4,748,000 „

Exported 1st July to 30th April.

	1896-7.	1895-6.
Rio to Europe	755,000 bags	625,000 bags
„ the States, &c.	1,995,000 „	1,325,000 „

Total from Rio ... 2,750,000 bags 1,950,000 bags

Santos to Europe	3,100,000 bags	1,910,000 bags
„ the States	1,295,000 „	900,000 „

Total from Santos ... 4,395,000 bags 2,810,000 bag

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of May 7th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1896-1897...	1,505,966 packages.	1,048,784 packages.	42,441 package
1895-1896...	1,438,577 „	928,831 „	51,400 „
26,290 pkgs. INDIAN	Total 69,012 packages were offered in publ		
41,513 „ CEYLON			
1,209 „ JAVA			

Movements of Tea in London as shown by the Tea Brokers' Association figures are printed below; the quiet trade ruling during the greater part of April is reflected in the deliveries.

Indian. Amongst the Indians a considerable number of last of the Season invoices were catalogued, bringing up the total to 311 against 32 to same date last year. The sale passed with good competition at above rates current last week.

Week's av. Tea sold on Garden Account, 1897, 10,578 pks., av. 7d. 1896, 6,766 pks., av. 8d. 1895, 15,955 pks., av. 9 $\frac{1}{2}$ d.

	1897.	1896.
	Pkgs. Price.	Pkgs. Price.
Assam	1,828 p 7 $\frac{1}{2}$	70 p 1/1
Cachar and Sylhet	7,469 p 6 $\frac{1}{2}$	5,923 p 8
Chota Nagpore	102 p 4 $\frac{1}{2}$	113 p 5 $\frac{1}{2}$
Darjeeling	—	—
Dooars	73 9	20 1/0 $\frac{1}{2}$
Kangra Valley, &c.	186 p 5 $\frac{1}{2}$	—
Neilgherry	134 p 7 $\frac{1}{2}$	116 $\frac{1}{2}$ c 8 $\frac{1}{2}$
Terai	22 5 $\frac{1}{2}$	—
Travancore	764 p 7	524 p 8 $\frac{1}{2}$

SUPPLEMENT TO PLANTING OPINION.

Comparative prices of Indian Tea in London :—

		1897.	1896.	1895.	1894.
ST.	(Fair ordinary, dark liquor) ...	4d	5d	4½d	4½d
NNINGS.	(Red to brown, strong rough liquor) ...	4d	4½d	5½d	4½d
BROKEN TEA.	(Brownish to blackish, strong liquor) ...	6½d	7½d	7½d	6½d
PK. SOUG.	(Blackish greyish, useful liquor) ...	7d	8d	8d	7d
PKOE.	(Greyish to blackish, some tip, useful liquor) ...	8½d	9½d	8½d	9½d
PK. SOUG.	(Blackish greyish, inferior liquor) ...	5½d	6d	6½d	5½d
PKOE.	(Blackish greyish, some tip, inferior liquor) ...	6½d	7d	7d	6½d

Ceylon. The 41,513 pkgs. were brought forward on two days, viz. Tuesday and Thursday. The sales passed with considerable spirit, fully to valuations current a week ago, the tendency being, if anything,

towards firmer prices, Broken Pekoes, however, showing here and there some irregularity. The official telegram from Colombo gives shipments to U. K. for April as 9,500,000 lbs., against 9,000,000 lbs. last year, and estimates the quantity available for May as 10½ to 11 million lbs.

Average for week rather under 7½d. against 8½d. last year.

Comparative prices of Ceylon Tea in London :—

		1897.	1896.	1895.	1894.
PEKOE SOUG.	(Ordinary leaf; fair liquor) ...	6½d	7d	7½d	6d
PEKOE	(Ordinary leaf, little twist; fair liquor) ...	7d	8½d	8½d	7½d
PEKOE SOUG.	(Rather bold leaf; indifferent liquor) ...	5d	5½d	6½d	5d
PEKOE	(Somewhat bold leaf; indifferent liquor) ...	5½d	6½d	7½d	5½d

Java. The 1,209 pkgs. consisted of Teas of poor quality, which passed quietly at about previous quotations.

MOVEMENTS of TEA in LONDON (in lbs.) during APRIL.

				IMPORTS.			DELIVERIES.		
				1897.	1896.	1895.	1897.	1896.	1895.
INDIAN	...	...	...	1,297,422	1,052,932	2,137,449	9,613,118	10,436,709	7,606,551
CEYLON	...	...	...	8,860,124	6,674,008	5,849,572	6,676,358	6,408,184	5,306,032
JAVA	...	...	...	420,630	335,230	416,990	254,590	292,320	434,560
CHINA, ETC.	...	...	...	93,416	440,572	80,625	3,458,176	3,216,468	3,843,681
TOTAL lbs. ...				10,671,592	8,502,742	8,484,636	19,002,242	20,353,681	17,190,824

FROM 1st JUNE TO 30th APRIL.

				IMPORTS.			DELIVERIES.			STOCK.		
				1896-97.	1895-96.	1894-95.	1896-97.	1895-96.	1894-95.	1896-97.	1895-96.	1894-95.
INDIAN	...	...	...	131,155,971	117,696,216	114,782,838	114,932,927	110,991,637	103,677,174	42,973,654	36,345,730	39,580,794
CEYLON	...	...	...	83,930,672	74,403,706	66,157,440	81,757,352	74,284,720	66,676,798	20,730,854	17,840,838	18,026,362
JAVA	...	...	...	3,278,380	3,587,220	3,617,320	3,328,500	3,442,530	3,118,500	937,580	1,082,200	1,166,130
CHINA, ETC.	...	...	...	32,725,588	40,983,943	46,501,178	36,286,082	38,233,192	42,231,357	16,079,101	22,461,639	24,064,488
TOTAL lbs. ...				251,090,611	236,671,085	231,058,776	236,304,861	226,872,079	215,703,829	80,721,189	77,730,407	82,837,774

Bank Rate 2½ per cent. Exchange on London three months sight.—Calcutta 1/2½ Colombo 1/2½.

PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 7d.) May 7th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	134 p	7½												
Brooklands	110 b	10	50 b	11½	60 b	9	...	...	...	...	...	...	...	...
TMK	24	5	...	...	24	5	...	...	...	...	...	...	...	...
South Wynaad	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Richmond	20	6	3	10½	4	6	...	...	13	5	...	...	...	...
Travancore	764 p	7												
Arnakal	104 p	8	12	9	34	7½	36	8½	8	6½	1	5½	13½c	7½
Brigton	18	5½	...	...	4	5½	6	6½	4	4½	1	4½	3	3
Chenkara	55	6½	...	...	12	5½	22	9	16	4½	1	2½	4	2½
Fairfield	44	6½	4	8	14	6½	10	8	11	6	3	5½	2	3½
Glenmary	92	8½	71	8 9½	15	6½	...	...	...	...	...	...	6	8½
Patanaveram	7 p	5½	...	...	6	5½	...	...	...	...	...	...	1½c	2
Travancore TE st BA	296	7½	...	...	59	7½	134	7½	25	6½	11	5½	67	5½
Travancore P Co G.	98	5½	8	5½	45	5½	21	7	14	4½	...	...	10	2½
Wallardi	50	5½	...	...	9	6	10	9½	11	5	20	2½	...	...

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per doz.	0	8	Addison & Co.'s London-made Blue-black Ink, qts.	1
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14 as., Re. 1-4 &	4	8	Do. do.	1
Faber's Ink and Pencil Erasers	0	6	Do. Violet-black Copying	2
Penholders, per doz., 5 as. to	3	0	Do. do.	1
Pocket Memo. Books, 7 x 4½, limp cloth, leather			Field's Non-corrosive Black Ink	3
backs	1	0	Do. do. do.	1
Pocket Cash Books, do.	1	0	Field's Treble-strength Copying Ink half-pints...	
Letter Clips .. 4 as., 6 as., 8 as., 12 as. &	1	0	McNiven and Cameron's, Mitchell's, G. Brandauer's,	
Superior White or Pink Blotting Papers, per quire,			Gillott's, Perry's, and Walter & Co.'s (Centric)	
Rs. 2-0 to	3	0	pens in small and gross boxes ...from 7 as. to	3

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PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

[Vol. II.]

COONOR, SATURDAY, JUNE 12, 1897.

[No. 12.]

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ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 25th June 1897.

Central Travancore. PEERMAAD, 5th June.—*Weather.*—Rainfall for May 3·87. For June to date '86. Monsoon appears to be not far off. *Ten*—Flushing well. Large yields everywhere last month. *Labour.*—Still scarce, one or two new clearings are very backward in construction.

Coorg. POLLIBETTA, 9th June.—*Weather.*—S.W. Monsoon started on the 7th, 20 cents on that date, 50 cents yesterday. Week previously rain less. *Crops.*—Many of the berries which have swelled are black inside, so that there is an appearance of more crop on the trees than there actually is. *Plant diseases.*—Removing and burning borer has been commenced, and it is found that there is very little borer this season. *Labour.*—Plenty of contractors at work. Canarese not begun to come in yet. *Health.*—Fair. The cholera from Amutti and Siddapur did not come this side.

Nellampathy. *Weather.*—Rain for fortnight 2·50; total for year 14 inches. The last few days seemed as if the monsoon had started, but to-day it is as bright as ever. I expect it's not far off however. *Crops.*—Rice 9 edingalies per rupee. *Plant-diseases.*—Coffee bearing a lot of wood and hardly any "leaf" visible yet; some places are handling. *General Health.*—Still very feverish, and lots of men down with the "foul fiend." *Labour.*—Tamils are in on some places and not on others. No Moplahs available yet, and I expect they are waiting for the monsoon to start.

S. E. Wynaad. PUNDALUR, 9th June.—*Weather.*—Since the 31st May the monsoon has burst in; on the 1st, 2nd and 3rd June it cleared during day, and since we are having unceasing monsoonish weather. *Crops.*—Tea flushing bountifully. The ryots have finished sowing of ragi and chamay and have taken up the plough and are beginning to sow paddy in the nurseries for transplanting. *General Health.*—Fair. *Labour.*—Sufficient. *Interesting Item.*—Consent Act.—Among the Kurumbers, Naickers and Punniers above seven years' girls get married and have intercourse with their husbands before they come to maturity. The man never tries to live with one wife until death; as soon as the girl brings forth three or four children the man tries to give up the woman to bring another young girl, and the first woman with her children are entirely forsaken and the poor woman finds very hard to make up her living with the youngsters. I think the Government should introduce the Consent Act into the villages and prevent

the custom by allowing the Adigharry and Menon to open marriage register and let the aborigines know that their presence is required for the registry before their marriages, that they are not allowed to have intercourse with their wives, and that they will have to give up their old customs

GENERAL NOTES AND ARTICLES.

Famine labour.

We have been asked to contra the statement that appeared in papers that the coolies that Mr. Ewart, Shencottah, to get from Bellary were for Atchencoil Estate. They were for the Isfield Tea Coy. Ltd's Isfield Estate. The informant says he hopes soon to send us an authoritative version of the whole affair, showing once more how plan in Native States can be legally swindled. The Isfield Company lost well over Rs.1,000 over their venture "Famine Labour."

Planting esprit de corps.

Some men, when they find working of their District Association not going exactly to their mind, of leaving it. A slightly wrong-headed way of going work. The *Times of Ceylon*, in some trenchant remark the great lack of *esprit de corps* among Indian plant North and South, puts the matter tersely:—

How on earth is an Association to do any good if planters not join it? As we have before pointed out, when there has discontent in Ceylon, the way to put things right is not by leaving the Association, but by taking an active part in its work, and ag ing for what is wanted.

Superintendents and proprietors.

An interesting question has been raised in Ceylon on the treatment of superintendents by proprietors in the matter of granting them sick leave on half pay, paying their hospital and other incidental expenses. certainly pays the proprietor to treat his superintendent well, if he be a good man. And if he isn't a good man is dear at any price. While the supply of planter undoubtedly large, really good planters are as scarce as e and there is no better way of getting the best out of a than by paying and treating him well, and trusting hi

Natal tea.

The recent low prices fetched Natal tea at home, only confirm the impression we have gathered from private advices its poor quality. We were of opinion that the s of manufacture could be greatly improved were tra planters from India or Ceylon in charge of the fact This has received proof from the recent success of a Ce planter, Mr. John Fraser, in showing the natives ho set about it. At a recent agricultural show at Johannesburg he gained the first prize and the warm commendations of judge. Natal, by the way, began tea planting two y before Ceylon, and hasn't turned out a million pounds y

Kanan Devan Hills Produce Company (Limited).

This has been established, offices at 22, West Nile-st Glasgow, with a capital of £100 in £10 shares, to acquire certain tea, coffee, and cin estates and plantations, and certain tracts of land p cultivated and partly uncultivated or undeveloped, in

State of Travancore, India, and to engage in the cultivation of tea, coffee, cinchona, &c., in India, Ceylon, Burmah, and elsewhere. The signatories are:—Sir John Muir, of Leinster, Bart., merchant, 22, West Nile-street; Sir Robert D. Moncreiffe, Bart., Bridge of Earn; P.R. Buchanan, merchant, Darleith, Cardross; A. C. Blackwriter, 72, St. Vincent-street; A. M. Brown, merchant, 22, West Nile-street; R. H. Sinclair, merchant, 22, West Nile-street (all of Glasgow); and R. Scott, publisher, 12, Paternoster-buildings, London.

Labour in Ceylon.

The threatened scarcity of labour in the Island, a scarcity that has been threatening for a long time now, seems to be close at hand. Not that the local papers are in agreement on the subject. The planting paper proper, the *Observer*, declares that two years hence, 100,000 additional coolies will be required for plantation work. The *Times*, always eager to pick a quarrel with its contemporary, declares that 50,000 would be ample. Meanwhile there is no doubt that South India will be tapped for labour far more severely in the future than ever in the past. Still, it is satisfactory to note that Ceylon men are making strenuous endeavours to open up new recruiting districts. This means competition with Upper India, which is already sneaking down South for their coolies. We suppose a change to Japan or China is very probable in the near future.

Cinchona.

The figures that buyers of cinchona bark are now offering, are on a higher basis than the rates ruling in London a few months back, says the *Produce World*, and at public auction $3\frac{1}{2}d.$ and $3\frac{5}{16}d.$ per pound has been paid for fair stout quill, and $2\frac{1}{2}d.$ to a fraction over for chips. These prices refer to African descriptions. East Indian Crown, original stem, is commanding $2\frac{1}{4}d.$ to $4\frac{1}{4}d.$ per pound, according to quality, and chips $2\frac{1}{2}d.$ to $3\frac{1}{2}d.$ per pound. Perhaps it will hardly be believed that a London firm of self-styled merchants a short time back advised some East Indian planters that cinchona bark being so unsaleable in the European markets, the most prudent course would be to use whatever collection they might have as fuel rather than waste the cost of shipping it to London. Whether such advice was given through sheer ignorance of the markets, or for market manipulation purpose, we are not at present in a position to say. In the meantime we content ourselves by begging reference by any victimized shippers to the above-mentioned quotations, which are likely to be maintained.

A sad case.

A sad proof of the necessity for some Benevolent or Provident Fund to which all planters should be induced to join, may be instanced in the sad case of Mr. Adolphus Wright's recent death at the Gudalur, Nilgiris, Hospital.

Mr. J. W. Minchin, of Rocklands, Ootacamund, writes us under date of 1st instant:—

Mr. Adolphus Wright, of S. E. Wynaad, has lately died in the Gudalur Hospital, leaving his family destitute. The Apothecary at the Hospital informs me that there are ten in the family—that they are in extreme poverty and friendless. The eldest daughter writes me that the eldest son can earn money as a carpenter. There are two boys who know nothing, and there are three boys too small to do

anything. There is also the eldest daughter who may earn a living and two other small girls, nine in all, with the mother without a home to live in and no money at all. The rent of the cottage they occupy in Gudalur is Rs.12 a month. I am trying to raise a fund and committee to assist this old planter.

We shall be very glad to open a subscription list in this cause as soon as Mr. Minchin may desire. We may add that we are reprinting in pamphlet form a few copies of Mr. Wright's History of the Wynaad, to be sold entirely for his benefit, at Re.1-8 per copy. The book can be obtained from MESSRS. ADDISON AND Co., *Planting Opinion*, Madras.

Tanning barks: Acacia Decurrens.

We have done our best to draw the attention of our readers to the possible advantages attendant on the cultivation of this acacia. To those few who have taken the matter up, the following extract from the *Ceylon Observer* should be of interest.

At the recent Nuwara Eliya Show, Mr. A. J. Kellow exhibited Acacia bark on which he had a most favourable report from Colombo tanners, and a price which did more than cover expenses. But even here, the carriage of heavy bark must be the drawback, and "T" himself has pointed out to us the following paragraph which shows how that difficulty is overcome in Australia by the bark being 'boiled down':—

"The bark of the Australian 'black wattle' has been shipped from Ceylon experimentally from trees planted six years ago on estates as boundaries and break-winds. Each tree stripped gave 22 lb. dried bark. It is a question whether the value of this bark as a tanning substance will enable a price to be realised sufficient to do more than cover railway and steamer freight. In Australia the cost of carriage from the interior, where no water transport exists, is so heavy that the bark is there boiled down to a thick substance in a highly concentrated form, which of course reduces the cost of freight on the solid tanning principle. Were this system adopted in Ceylon, it might be found to effect a great saving in cost of transport."

Perhaps Mr. Kellow will give a trial to this plan in Ceylon and report the result.

Coffee vs. Tea cooly.

It is very desirable at times to make separate agreements with individual coolies, sturdy free-lances who don't appreciate the loving care of the maistry. These want to be the Doray's men, to be personally and not generally bound. Now a coffee-planter, under a special notification under the Stamp Act, can execute a legal agreement with individual coolies for the small stamp fee of one anna. The tea-planter on the other hand has to pay the usual eight annas. A not easily understandable distinction this, especially when it is remembered that the notification in favour of the coffee planter, above alluded to, was dated the 7th June 1894. This matter calls for the attention of the U.P.A., and we trust our Planting Member of Council will think it worth his while to take it up.

We append an extract from a recent letter of the Collector of the Nilgiris, who was referred to for information on the subject:—

By notification, dated 7th June 1894, the duty on agreements executed for service or for performance of work in a coffee plantation in the Madras Presidency, Coorg or Mysore, when the advance given under the agreement does not exceed twenty rupees, has been reduced to one anna. It is immaterial whether the agreement is executed by one cooly or a number of coolies, so long as the agreement itself is one, in other words so long as the advance is one and the terms of the agreement give a joint application to all the coolies.

Don't plant in Madagascar.

With the recent troubles, to use a mild term, in this country we should think few would care to embark in planting in the island. A Ceylon planter, who has started work there, writes the following pitiful warning to his confrères in Ceylon. Addressing the editor of the local *Times*, Mr. Lewis Way writes from Antananarivo:

I write you this letter in the hope you may think it of some service to tea-planters in Ceylon to publish, in case any of them should have an idea of coming to this country to start planting, in which case my advice to them is to go anywhere rather than to Madagascar. The soil is good enough, and land is very easily obtained, in most instances, but it is very hard to get anything beyond the land. Rice is now rising to appalling rates, labour is almost impossible to be obtained, and the Government throws every possible obstacle in a planter's way, especially if he is an Englishman. Last November the Government pretended that there was a flaw in the title to the estate I am managing here, and it took me two and a half months to get permission to continue working the estate, and, as soon as I got this permission, my labour force was taken for *corvée* on the roads, and I was unable even to get a cook or a kitchen coolie!

The natives, in fact, have told me down here that they dare not work for me, because they are afraid of the French! Consequently, I have been forced to practically abandon the estate for the time being, just as the crop is about to ripen.

The Governor-General declines to see me and discuss the matter with me in any way, and to request that I may be allowed to recruit labour from a neighbouring tribe gives no answer whatsoever.

Unless anyone wants to find out how far he can enjoy being boycotted, to the extent of having to buy his dinner in the market, and to cook it himself, he'd better not come to this country to plant.

Guayaquil cocoa.

The British Consul's review of Equador trade says that the total receipts of cocoa at Guayaquil during the years 1895-96 arrived in the following order:—

Month.	1895.	1896.
January ...	579 tons.	853 tons.
February ...	701 "	1,150 "
March ...	1,216 "	1,971 "
April ...	1,826 "	2,460 "
May ...	2,319 "	2,721 "
June ...	2,358 "	1,180 "
July ...	1,859 "	1,506 "
August ...	1,790 "	1,257 "
September ...	1,237 "	942 "
October ...	980 "	280 "
November ...	560 "	431 "
December ...	697 "	576 "
Total	16,122 "	15,327 "

The 1896 supply emanated from the following sources:—Arriba, 11,180 tons; Machala, 1,897 tons; Balao, 2,250 tons. The Arriba crop promised to be much larger, but was considerably damaged by a plague of caterpillars, belonging to the *Bombyx* family, which in many districts entirely stripped the leaves off whole acres of trees. The Machala and Balao crops showed a very diminished production on account of two years of excessive drought in those districts. As the rains of 1896-97 began early, and with unprecedented severity, it is hoped that the incoming crop may be a very large one. All the extra charges on cocoa and coffee have been sustained up to the present, notwithstanding the original decree that they would terminate in June 1896. Moreover, a new tax of $\frac{1}{2}$ c. per kilo. on all exports, except ivory nuts, has been imposed from and after December 5 to be applied for two years for the expropriation of lands to widen the streets of Guayaquil and form new streets.

Planters who succeed.

We noticed a bright little article on "Farmers who Succeed" in an American contemporary. Slightly paraphrasing it rendered it applicable to planters: Planters are divided into three classes. First, those who take up everything new in manure methods of cultivation, pruning, manufacture, produce and machinery without stopping to think or studying the demands of their market, the possibilities of their soil and the peculiarities of the climate. Invariably they make failures. The second class are those who never buy or produce anything new in the way of products, &c., use the same manure and machinery their predecessors did, never attempt any new methods of cultivation or trouble themselves at all about improved planting generally. They are like the bullock's tail, are always left behind.

The third class are those who think, study their market and soil, begin on a small scale and experiment until the problem is solved. This class is the one that is making money at planting, the other two are in the background. One and two are both bound for the same place, but seem to be going in opposite directions. One acts without thinking; the other thinks without acting. One is extravagant in buying unnecessary things; the other extravagant in not buying necessary articles. One has no fixed method of labour; the other's methods of labour fix him. The two classes are an anomaly, and as Lamartine said of Robespierre, are "shadowy, undefined—mixed." Not with those designated as the third class. They have an aim in planting, and as a result have a well defined plan and combine brain and muscle—theory and practice—know the old way but adopt the new, and are a success. They believe in the modern theory of advancement as applied to agriculture, and are bettering their condition by working along these lines. The methods of the past generation will not do for the improved order of things that marks the pathway of other men who are a great success in this work.

COMMERCIAL NOTES.

THE improved credit of the Government of India has been extolled by many newspaper writers, but it is doubtful if that credit is improving now. Since the 3% Rupee loan was issued, Calcutta and Madras Municipal Bonds have often commanded proportionately better prices than Government paper! And here are some interesting facts:

1. The London County Council called for tenders for 12 months for its six months bills to the extent of £600,000. The tenders amounted to £3,985,000; those at £99-10-0 would receive about 51 per cent., above that in full. The bills allotted will, it is said, yield an average rate per cent. of £1-1-11.

2. The Leeds Corporation, about the same time, placed £500,000 2½% stock. Tenders amounted to £2,083,400; those at £98-8-6 would receive about 46 per cent.; the bills above that in full. Average £98-9-1.

3. Similarly, the Brighton Corporation placed £337,000 of 2½% Redeemable Stock at an average of £97.

4. The Indian Sterling loan of £3,500,000 at 2½% placed almost simultaneously with the above, yielded an average of only £96-15-11, the minimum being £96-10-0.

So much for India's excellent credit!

The accounts of the Southern India Tea Estates for the year show a net profit of £1,193 after payment of interest on debentures. This enables the Directors to declare a dividend that brings the return for the year up to 10%, and steps are likely to be taken to enable the company to plant out the large area of valuable land that still has lying unproductive.

The event of the hour in this Presidency is the proposed conversion of the good old firm of Spencer & Co. into a Joint Stock Company under the Act. The capital is large—Rs.25,00,000—but it is almost all taken up already, and the complete success of this private “conversion scheme” is assured. From the prospectus issued a few days ago—an abridged version of which appears on another page—it is quite clear that handsome dividends may be looked forward to, and if the firm needed any additional security in regard to its hold on the public’s favour, it might reasonably expect to find something of the kind in the fact that many, perhaps most, of its present customers will, becoming shareholders, acquire a direct financial interest in the continuance of its success. Mr. E. P. Oakshott, the proprietor of the business, will retain a very large stake in the Company, and Messrs. A. W. D. Oakes and James Given, his partners, who assisted him in working the concern up to its present high level of prosperity, have also engaged to assist the Company. The combined efforts of these gentlemen have been so effective in the past, that we may safely say the future will show no falling off, but rather a continuance of steady, healthy growth. The figures given in the prospectus only show the general results of the working of all departments and branches together. Perhaps the best proof of the solid strength of Messrs. Spencer and Co.’s business is to be found in the fact that each and every branch, as well as the Head Office itself, shows the same grand record of increasing turnover and profits. It savours of affectation to wish success to an enterprise so fully assured of it as Spencer and Co., Ltd.; but we express the wish, heartily, nevertheless, and are glad to think that the royal celebration of Her Majesty’s Diamond Jubilee will be soon followed by a local event of such general interest and importance as the conversion of Spencer and Co. into a Joint Stock Trading Company.

JOINT STOCK TEA.

It is curious how little headway Joint Stock Tea Companies have yet made in Southern India. They are now coming into life, and bid fair to revolutionize the tea industry in this part of India. Yet even now there are few signs of *small* Companies, and apparently very little local capital is invested in the large ones that have commenced operations. That what we may call “Joint Stock Tea” is profitable, may be easily seen by a reference to financial papers. Some concerns are unsuccessful, but the average dividend yielded is a good one, and renders it the more surprising that private endeavours in the South should so long cling to old systems and to individual effort, when the North has made so pronounced a success with consolidation and co-operation. It might be worth the while of planters in Southern India to give more attention to this subject than they have done up to the present time; and we should be greatly obliged to secretaries and shareholders of any

existing companies if they would kindly send us particulars and, if possible, recent reports in respect to them. It is no uncommon thing for Northern Tea Companies to pay a steady 10%, and some of our leading planters might find it to their advantage to set the fashion here of ‘converting’ their estates into the property of Limited Companies.

U. P. A. S. I. LEAVES.

(GATHERED BY THE SECRETARY, U. P. A. S. I.)

THESE will not be leaves of the poisonous Upas tree, but leaves of the U. P. A. S. I.—a mere shrub at present, but one that promises to gain strength with years, and vie with its more famous and less egotistical rival in the stoutness of its trunk, the number and spread of its branches, and, let us hope, the grateful influence of its Leaves. Its roots are already striking deep into the soil, that soil which planters tickle without reluctance, and feed or impoverish, or feed and impoverish by turns, as the fancy takes them and science, prescience, or nescience dictates.

The above may serve as preface and—apology.

It is certain that the next Annual Meeting of the U. P. A. S. I. will be held at Bangalore during the Race Week, which begins on the 5th August next. Probably, the Meeting will open on the 9th idem. The Annual Planters’ Dinner is likely to be held on the previous Saturday evening, so that delegates from far countries may come to know each other as good fellows before they learn to appreciate each other’s powers as debaters and, as Ramasawmy might say, *cestatesmen*. [The poor joke is a dead leaf: it *would* fall.]

The Agenda paper has yet to be drawn up, but there is already promise of a more than usually interesting meeting; and this means a great deal. One proposal is to register the Association, as one working for purposes other than those of profit-making, so that the Association and its Executive may have a status in the eye of the law, and be able to deal with funds, Reserve and other, more freely than is possible now, when, in the sight of our busy Courts, the U. P. A. S. I. is a name, and nothing more.

Then there are some new proposals about the raising of Funds, the conditions of membership, the work of the Association, etc. One gentleman wishes Individuals to be admitted, with restricted voting powers, along with District Planting Associations; another desires to recast the system whereby subscriptions are raised; another would have certain sums set aside from time to time for the prosecution of scientific investigations into the causes of leaf disease and other bugbears of the planter. All these are points of grave importance.

There is yet another, as grave as these. The Government of Madras has been asked to express an opinion upon the report of the Planters’ Commission of Enquiry and, with true wisdom, has decided to first give the U. P. A. S. I. a chance of putting before the authorities the opinions of planters on a document that is of the utmost concern to them. After careful consideration it has been decided that this report shall be fully discussed at the Annual Meeting. True, a special Committee Meeting might be called earlier,

and this might help to impress the Local Government with a belief in the energy of the planting community and an idea of the importance it attaches to the subjects dealt with by the Commission of Enquiry. On the whole, however, thoroughness is preferred to undue speed; and when the Planters' remarks on this report are sent up to Government, they will have behind them the weight of many opinions, the combined strength of the intelligence of the various District Planting Associations.

The Address and Casket for Her Majesty the Queen-Empress have been despatched. Brevity is the characteristic of the former, simplicity and chasteness that of the latter, which represents in silver a hollow bamboo, supported by two kneeling coolies, whose bodies stand out in oxydized metal. The bamboo bears an engraved wreath of tea and coffee brands, with the inscription:

To Her Most Gracious Majesty
Victoria,
Queen of Great Britain and Ireland,
Empress of India.
The Humble and Loyal Address
of the
United Planters' Association of Southern India,
on the completion of the sixtieth year
of her most glorious reign
1897.

On either side of the wreath are engraved scenes from the planter's life—coolies at work, bungalow, &c., &c., and the bamboo itself is lined with velvet. Above the inscription, in scrolls, are the words Tea, Coffee and Cinchona.

The Casket stands on an ebony base, in the centre of which, in front, is a shield bearing an exquisitely chased design of the Royal Coat of Arms; and a handsome polished rosewood box gives protection to the whole.

As for the address, it runs as follows:—
To

HER MOST GRACIOUS MAJESTY
VICTORIA,
OF THE UNITED KINGDOM OF GREAT BRITAIN AND IRELAND,
QUEEN—EMPRESS OF INDIA,
DEFENDER OF THE FAITH.

MAY IT PLEASE YOUR MAJESTY,

We, the United Planters' Association of Southern India, through our Executive officers, desire most dutifully and humbly to approach Your Majesty with our respectful and loyal felicitations on the duration of a reign, not merely the longest but the most glorious in our annals, and marked by the growth of an Empire such as the world has never hitherto seen: by gigantic strides in the development of Industry, Science and Art: by a love of peace which has gone far to secure that blessing to Europe for the present generation: and finally by the example of Your Majesty's domestic life.

The vast Empire of India, in common with other parts of Your Majesty's dominions, has felt to the full the benefits accruing from a wise and peace-loving reign: and that Your Most Gracious Majesty may long be spared to rule over us, is the heartfelt prayer of Your Majesty's faithful and loving subjects in India.

Joining with earnest sincerity in this prayer, we ask permission to subscribe ourselves,

Your Majesty's most loyal, most obedient
and most devoted subjects,

THE UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA.

Each District Association has received copies of the Address, and photographs of the Casket will follow as soon as they are ready. These will form more or less lasting mementos of the year of Grace 1897, the year of the Diamond Jubilee of Her Gracious Majesty Queen Victoria, the Great and Good, the first British Empress of India.

THE CULTIVATION OF RUBBER.

We are glad to see that a start is shortly to be made with the planting on a really extensive scale, of para rubber in the Malay Protectorate. The climate and soil are peculiarly adapted to the growing of this product, the demand for which throughout Europe is increasing with formidable leaps and bounds. An idea of the huge profits to be obtained on this article, may be gathered from the fact that at this moment, pure para rubber can be sold in London at 3s. 7d. per pound, though it can be grown at 6d. It is therefore not surprising to find that the interest of keen commercial speculators is just now being enlisted throughout the Malay States, and in Kuala Lumpur in particular, in the formation of a syndicate to promote the development of so profitable an industry. Striking testimony to the very inviting character of this cultivation is borne by the *Ceylon Observer*, and although the remarks of that journal refer more particularly to Mexico, they will be found to apply with equal force to the Malay Peninsula. The *Observer* says:—"Nothing seems more certain than that the great rubber industry will be partially paralysed through exhaustion of present sources of supply, and that the fortunate owners of rubber plantations, be they few or many, will reap huge fortunes. It is this certainty, proved by the rubber statistics, which is at the bottom of the great efforts now being made to obtain plantations in Mexico and elsewhere, but chiefly in the former country. Mexico is the home of the *Castilloa elastica* acknowledged to be the best of the rubber-yielding trees from the planter's point of view. *Hevea brasiliensis* gives the most valuable rubber—para—now worth 3s. 7d. per pound, while that from the *Castilloa* only realises 2s. 4d. But the difference in value is greatly owing to the better methods of preparation which obtain in Brazil. When the *Castilloa* milk has been taken in hand by a skillful British chemist, as it shortly will be, we shall, without doubt, see a marked improvement, and the price will be levelled up to within measurable distance of that of 'fine' para. The prospects of the rubber planter in Mexico, even at present values, are more rosy than those of any other arboricultural industry. And this applies, more or less, to every country in which the *Castilloa elastica* will thrive. A profit of 300 per cent in the eighth year is what the experts are promising, and the figures are based in one instance on a selling price of 1s. per pound for the rubber, and in another on 2s., the first being less than half the market value of *Castilloa* rubber in London to-day and the second 4d. below it. That rubber can be grown cheaper than it can be purchased from the native collectors is an absolute fact, and it is obvious that the quality must be far superior to a wild product, except, perhaps, para, the method of preparing which does not seem capable of improvement. For joint stock enterprise the cultivation of rubber trees in Mexico offers a fine field, as there is no substitute for rubber worthy of the name and small probability of there ever being one. At present adulteration is rife, greatly to the detriment of the trade. We hear of powdered flint and cement being used to eke out the supply, and the demand for old worn out rubber goods is very great. The only apparent remedy for this disastrous state of things is cultivation on an enormous scale."
—*Malay Mail*.

BRITISH NORTH BORNEO.

ESTIMATE FOR LIBERIAN COFFEE.

The following interesting notes are from the *Ceylon Observer*:—

As we mentioned in our last issue, Mr. Henry Walker, Commissioner of Lands, British North Borneo, who arrived at Colombo by the German mail steamer "Preussen," makes a stay of about three weeks in the island, principally for the purpose of affording information

to planting capitalists regarding the prospects in that settlement. In the afternoon Mr. Walker left for Kurunegala on a visit to friends, before he took his departure he kindly favoured us with a few lines which we think will be read with interest by our readers. He mentioned that some very important enterprises are now being energetically pushed in North Borneo by monied Companies or syndicates, notably the Railway (by the Government) from the Coast to the, as yet, unopened interior. With regard to the tobacco enterprise he said that the crop of 1896 now going to Europe will be 12,000 tons of 188lb. each and the prices realized this year in Amsterdam are 50 per cent. higher than last year (which were considered high). The timber trade with China is increasing and the Bombay-Burmah Trading Company propose to lay down a large saw mill. As the soil there is suitable for tea boxes a large trade may be done with Siam. Petroleum oil is being sought for and the Bombay-Burmah Trading Company lately sent 100 tons of boring plant to North Borneo. Oil is known to exist at two places and it is hoped a large quantity may be found to exist. The exports of coal from Labuan and Bremer Bay are increasing—say 4,000 to 6,000 tons per month. It is used by the P. & O. Company who lately made a contract for 100,000 tons—and it is understood they are satisfied. From a circular prepared by Mr. Walker we are permitted to make the following extracts:—

We have a well divided rainfall, and consequently, although it is heavy, say from 70 to 120 inches per annum, the effects are not so disastrous as in those tropical countries where the rainfall is limited to a few months of the year and the daily fall is so great as to wash away all the humus, and, further, our rocks, including lime-stones, serpentines and conglomerates, are naturally rich in substances suitable to vegetation, and, when evaded, afford a suitable soil for tea, coffee, sugar, cinchona, gambler, coconuts, &c., all of which (except cinchona) have been tried with success either experimentally or on a large scale, and as our lands run up to a height of over 13,000 feet, we can offer the intending investor the prospect of making a home in a cool and invigorating climate.

We believe we now offer better prospects of financial success than any other tropical country. At present we are willing to make free grants of 500 acres on 99 years' lease to encourage the planting of certain products, provided that the intending investor has £2,000 capital and will make a *bona fide* commencement to bring such land under cultivation within 18 months from the date of selection of the land and that he will bring one-third of the 500 acres under cultivation within 12 years from the date of the agreement for a lease. Should he fail to cultivate one-third of the 500 acres he will be only entitled to remain on the 500 acres of jungle for each acre cultivated; but if he desires to retain the balance of the 500 acres he can do so by paying 20 cents rent per acre or purchase such land at three dollars per acre.

The Currency in use in British North Borneo in the Mexican dollar, which since 1894 has fluctuated in value between 1/11 $\frac{1}{2}$ and 2/1 $\frac{1}{2}$. The average rate of exchange on the estates, including the Mandore (cangany) is between 27 to 29 cents a dollar. The coolies employed are Javanese, with advances and Malays or varieties of the Malay race, with or without advances as the case may be. On Ulanpakad Estate, now being opened by Mr. E. R. Walker (late of Le Vailon Estate) the coolies employed are obtained on the spot, and the advances outstanding at the end of each month are under two dollars a head, and at Toritipan Estate with a force of over 200 coolies of mixed nationalities, the total advances are usually under \$1,000 or less than \$5 a head, which amount is not guaranteed by the Mandore, but is a debt due by each individual cooly. The Javanese and Malays from Singapore usually sign to work a year and receive \$12 or even \$18 a head payable in equal monthly instalments; the locally engaged coolies work on a verbal agreement terminable by a month's notice and receive two or perhaps three dollars advance, which is really a cash advance to obtain food, and is deducted at the end of the month if the Manager thinks fit.

Food supplies are paid for by the coolies, or each week a chit is granted by the Manager for a small sum which is accepted by authorized shops, where food is supplied at fixed rates, of which a scale in English, Malay and Chinese is hung on the door of the shop. The transport acquired by the Estate is done by the oppman.

In 1895 I constructed a trial path from the west coast to the interior, where there is a large native population, and since I left (in May, 1896) a Railway (metre gauge) has been taken in hand, following much the same line of country. The Railway line when finished will be about 52 miles long with the upper terminus (altitude 600 feet) at the foot of a range of hills running up to 3,400 feet with good soil and well watered. The Railway works now afford employment to a large number of Chinese and natives, and, when completed, a large body of well-disciplined labourers will be available for the planting industry. A planter can now obtain work-people—men, women and children—near the line of the railway. He must, however, be able to speak Malay, a language easily acquired, and he must follow the customs of the country: if he cannot accustom himself to these he had better not come.

I give below an estimate of the cost of opening 100 acres of Liberian Coffee which works out (at the end of the third year) at something less than £16 sterling per acre. The figures were given me by a Coffee Planter in British North Borneo, and are based on rates and wages as now paid. I have appended a few marks on the items showing where a managing proprietor may economise, and a little examination of the estimate will show that £12 per acre should suffice to plant a second 100 acres could be planted for about £10 an acre. I should mention the fact that the expenditure is becoming less and less each year. Estimate of cost (in dollars) of opening 100 acres of Liberian Coffee in British North Borneo.

Present rate of Exchange 2s. per dollar.	
Superintendence, say 12 months at \$ 150 per month	1,800
Felling 100 acres at \$ 2.50	250
Piling and burning „ 3.50	350
Lining „ 1.00	100
Holling 43,500 holes 2 ft. by 1 ft. 6 in. (10 ft. by 10 ft.) at 1 cent	435
Filling and planting at 1 $\frac{1}{2}$ cts. per hole	652
Shading 75 „ per acre	75
Supplying	100
Nurseries and seed—N.B.—The seed should be obtained from a high estate in estate in Ceylon or India	300
Weeding 6 months at 90 cents per acre per month	540
Roads and Drains	1,000
Lines, 2 sets	150
Bungalow	500
Tools	250
Contingencies	500

Cost at end of 1st year ... \$ 7,002

Superintendence	1,800
Supplying	100
Nurseries	100
Weeding at 90 cents per acre per month	1,080
Roads and drains	200
Buildings	100
Tools	100
Contingencies	150

Cost during the 2nd year ... \$ 3,730

Cost during the 3rd year exclusive of crop expenditure ... \$ 3,730

Total cost at end of 3rd year ... \$ 14,462

In the foregoing estimate the cost of weeding has been taken at a safe figure. Mr. E. R. Walker opened 36 acres in 1896, and his weeding for the five wet months, October 1896 to February 1897, averaged 80 cents per acre per month and the older coffee on Toritipan Estate costs 55 cents on monthly contract. The item superintendence is a heavy one, but that would be less per acre as soon as a larger acreage is taken in hand. As the actual cost of living is not more than one dollar a day for food, the intending planter may gauge his own personal expenditure on drinks, clothes, etc. The other items are based on the present cost of works in British North Borneo.

The yield of crop in the 3rd and 4th year should pay for the crop buildings and machinery, say a total of £200 to £300. Large stores are not necessary provided a small hot air drying shed be erected, in which the parchment can be dried in about 8 hours and be packed in bags and despatched the same day. The 5th year should give 5 cwt. and when the coffee is 6 years old the yield of coffee may be expected to be 7 cwt. per acre without manure, but with manure 10 cwt. or even more may be expected.

The expenditure on the estate on a crop of 7 cwt. per acre should be less than thirteen dollars per cwt., and the London expenses including freight are nearly 9 shillings per cwt., say at present exchange a total cost of about 35 shillings per cwt. As I have previously stated, we find that the estate expenditure is becoming less each year, according as the labour force becomes more skilled.

ENTOMOLOGY AND PLANTING.

WE make no apology for reproducing in full the following interesting notes from the *Ceylon Observer*:—

A recent number of that very useful publication, The Hawaiian Planters' Monthly, contained a special Report on his work as Entomologist, from Mr. Albert Kœbele. It is long and technical, and may be deemed too dry and scientific for perusal by the general reader; but we have reproduced it in our daily and *Tropical Agriculturist* for the benefit of our planting community. There are not a few thoughtful planters, we are glad to say, still in the island and to them the account of Mr. Kœbele's work among the "poochies" and other enemies of planting and agricultural industries, will not be uninteresting. Hawaii is as great a paradise for insect and fungoid life as is Ceylon; but there are striking differences, because we find Mr. Kœbele endeavouring to introduce such enemies of insects as rats, bats and toads. And without success, too, in the early trials, as regards the first and second, though there is hope that the batrachian introductions may get on. Now, we need scarcely say that there is no lack in Ceylon of such enemies of insects as are above detailed. Indeed rats were at one time a great enemy of the coffee-planter in certain districts. When their food in the jungle—the *nillu* plant for instance—failed them, rats sometimes invaded the nearest coffee plantation and nipped off the primaries

or secondaries of the bushes, thus inflicting a terrible loss on the owner. Such experiences however—as indeed, alas, coffee itself almost—are things of the past in Ceylon; for, we have not heard of a single case in which rats have attacked our later staple product, tea.

We naturally referred Mr. Kœbele's Report to Mr. E. E. Green, who has been good enough to supply us with a series of "Notes" pointing out the portions, and the enemies, which have a direct interest to Ceylon planters. This we append as an admirable summary for local use of the full Report. But, before doing so, we may quote from a very interesting letter accompanying "the Notes," which has remained by us too long:—

Eton, Punduloya, 19th April.—I return your copy of "The Hawaiian Planters' Monthly," containing the Report of the Government Entomologist (Mr. Albert Kœbele). This whole Report goes to show what can be done by an intelligent man—with a knowledge of his subject—who can give his whole attention to the work. Not that everyone would have succeeded as admirably as did Mr. Kœbele. He seems to have been the man most exactly fitted to the task.

It may be said by sceptics that this glowing account of his success is merely the man's own testimony. But there is ample outside witness to the value of his work. In a recent number of "Nature" (25th March '97), Mr. R. C. L. Perkins—the Naturalist deputed by a Committee of the Royal Society and British Association to investigate the Fauna of the Sandwich Islands—speaks in the highest praise of the results of the introduction of beneficial insects into the Hawaiian Islands.

I have just received a letter from Mr. Kœbele himself in reply to my question as to whether he would be in a position and willing to undertake a similar work in Ceylon.

It appears that the Madras Government has also approached Mr. Kœbele on the subject.

With respect to Ceylon, Mr. Kœbele writes:—"If the Ceylon people should want me my services would be required in India also It would suit me to introduce all enemies I know of for any scale pests you may have in the respective places. I could do it—alone—in about two, at longest three years. I may be able to come at the beginning of next year if so desired—not permanently, but only for the time stated."

Mr. Kœbele does not answer my enquiries as to the cost of the undertaking and the remuneration for his services. I am writing again to ask for some estimate. In one respect I think Mr. Kœbele misunderstands the position. We do not require such a general and varied introduction of different species as has been carried out in the Hawaiian Islands, covering a long period and occupying the continued attention of the specialist. All we want at present is to see the one or two species of lady-bird beetles that are most likely to help us against our dominant pest ('green bug', *Lecanium viride*) properly established in Ceylon. This could certainly be effected within a very much shorter time than that suggested by Mr. Kœbele. As I mentioned in one of my former letters, I do not advocate any very extravagant outlay in the experiment. I am now of opinion that the decay of coffee was not by any means entirely or even mainly due to the ravages of the bug, though the bug hastened the downfall by sapping the system of the trees already weakened by other—more deeply seated—causes, of which leaf-disease was the prime factor, backed up by a reckless waste of surface soil.—E. E. GREEN.

We quite agree with Mr. Green that Mr. Kœbele takes an exaggerated view of what is required in Ceylon, and indeed he must learn that the cultivation of "Coffee" has been so reduced in area in Ceylon—only a few fields in a few districts being left amidst the universal "tea"—that the support available for the introduction of the enemy of "green bug" is very limited. The same may be said of Southern India: only in Coorg and Mysore is there an appreciable quantity of coffee left." (III Ed., *Planting Opinion*.) "Our proposal was that the planters of Southern India and Ceylon should unite, getting aid from their Governments, in making up a suitable fee and the necessary expenses for Mr. Kœbele. If his mission proved successful with us, it is very likely that further profitable commissions might await him, especially from Java, Sumatra, and the Straits Settlements. But he must know that nowhere in the East is coffee "king" now-a-days.

The practical "Notes" with a local bearing, supplied by Mr. Green on Mr. Kœbele's Report, are as follows:—

NOTES UPON THE REPORT OF THE ENTOMOLOGIST OF THE HAWAIIAN GOVERNMENT.

1. *Dactylopius ceriferus*.—Not uncommon in Ceylon; usually in insufficient numbers to be serious. But I have quite recently noticed a really bad attack of this blight in Colombo, where the insect was so abundant on several ornamental shrubs that the plants were quite disfigured and parts of them actually killed.

2. *Dactylopius adonidum*.—Though it is doubtful if the species has been rightly determined (I believe its correct name to be *Dactylopius citri*); the "mealy-bug" long known as a coffee pest in Ceylon.

3. *Pulvinaria psidii*.—Very abundant in Ceylon. It has seemed to have considerably extended its range within the last few years. I first noticed the species some ten years ago upon cinchona. I next found it established upon tea; and I constantly find it now upon individual tea bushes which are completely blackened by the accompanying growth of fungus. Fortunately, it does not spread much upon tea. The species is almost constantly present upon garden trees. Orange and lime trees are much subject to its attacks. I could give a long list of ornamental shrubs in the garden and wild plants and jungle trees upon which I have noticed the pest. At present some *Aralia* plants in my garden are literally covered with the insects. In fact, the species is fast becoming omnivorous. Curiously enough the coffee plant, which is so badly affected by this pest in the Sandwich Islands, is one of the few Ceylon plants upon which I have not found the insect.

4. *Lecanium acuminatum*.—Under this name Mr. Kœbele is referring to a large triangular flat scale that is sometimes rather injuriously abundant upon mango trees in Ceylon.

5. *Aspidiotus aurantii*.—Present in Ceylon; but not so far noticed in sufficient numbers. Our climate appears to be too tropical for its comfort. As Mr. Kœbele points out, the species flourishes better in more temperate latitudes.

6. *Aspidiotum cydoniæ*.—Common on many different plants, especially upon fruit trees of various sorts, where it seems to appreciate the fruit itself. I have seen the rind of a pomelo fruit so thickly encrusted with the scales that the natural surface was completely obscured.

7. *Aspidiotus camellia*.—A common and distinctly injurious pest upon tea cinchona in Ceylon.

8. *Parlatoria zizyphi*, and *P. pergandei*.—It is surprising that neither of these two species has yet been recorded from Ceylon. They are both very common pests of orange trees and have been introduced into most countries where oranges are grown, being very easily imported upon the rind of the fruit. We probably owe our immunity to the fact that we rest content with the old original varieties that have been cultivated here from the earliest times, without attempting to improve the strain by the importation of plants or seed from other countries.

9. *Mytilaspis citricola*.—Common on orange trees in Ceylon.

10. *M. gloverii*.—Collected from orange trees in Kandy.

11. *M. pallida*.—Common on several wild shrubs in Ceylon. Found occasionally upon guava trees.

12. *M. pomorum*.—The only living examples of this insect that I have seen in Ceylon were upon the rind of imported Tasmanian apples. In England the species has become almost omnivorous. The species does not appear to flourish in the tropics.

13. *Chionaspis biclavis*.—This species is nearly always present often in enormous numbers—upon the stems of cinchona and tea plants. It is a very inconspicuous insect and escapes general observation from the fact that the colour and texture of the scale is wonderfully adapted to the surface upon which it resides.

14. *C. eugeniae*.—Some scale-insects found upon *Litsea zeylanica* and several other jungle trees were determined by Mr. Maskell as varieties of his species *C. eugeniae*. It is not a species that is likely to prove of economic importance.

15. *Diaspis amygdali*.—Very abundant on many trees and plants in Ceylon. It is a common pest of geranium plants—(see 'Coccidæ of Ceylon,' page 68.)—I have lately noticed that it has established itself upon the stems of one of our common shade trees, the 'Dadap' (*Erythrina*, sp.)

16. *Florinia camellia* (F. *florinæ*).—This species has been noticed upon tea in Ceylon this year for the first time. It is a minute insect, and though present in considerable numbers, it does not seem at present to have materially affected the health of the plants.

17. *Ceroplastes rubens*.—Occasionally present upon tea.

18. *C. floridensis* is also found (rather commonly) upon tea and other plants but does little or no harm.

19. *C. ceriferus*.—Quite a large species, measuring sometimes nearly half an inch in diameter; common upon many wild plants; and occasionally present upon tea stems. The insect produces such masses of waxy matter that experiments have been made to test its economic value. The wax was found to contain too much water to make good candles (they spluttered uncomfortably when burning); but this defect could doubtless be rectified by proper treatment.

20. *Lecanium coffea*.—Once our principal coffee pest is now quite in the background, having been ousted by the more dominant species *L. viride*. It has transferred its attentions to tea and is sometimes found in force upon individual trees, generally such as are under the shelter of some overhanging roof.

CENTRAL HOTEL,
INFANTRY ROAD, BANGALORE.
(Under English Management.)

The most comfortable and convenient for visitors.
TERMS MODERATE.

21. *L. longulum*.—A decided pest of some of our most valuable shade trees. We have found it upon the 'sau' tree (*albizzia*) and very commonly upon greas—often in such numbers as to stunt the plant.

22. *L. nigrum*.—Another quondam coffee pest, now seldom found upon that plant, but occurring abundantly upon many wild trees and shrubs, and also upon several garden plants, more particularly upon begonias.

23. *L. tessellatum*.—A widely spread species in Ceylon. It is often very abundant upon the fronds of the 'kitul' palm (*caryota urens*). I noticed it in the Palm House at Kew Gardens upon the same palm and found several of the gardeners engaged in picking off and destroying the scales.

24. *Triococcus arancarsæ*.—When I was at the Hakgala Gardens some few years ago, several 'Norfolk Island Pines' (*araucaria excelsa*) were badly infested with this species. The presence of the pest was noticeable at some distance by the slightly black fungus that followed the attack. The trees were greatly discoloured, and I believe ultimately seriously injured.

25. *Rhizobius ventralis*.—Of the "lady-bird" beetles, this is the species that seems most promising. It feeds principally upon that particular group of scale insects known as the *Lecaniidæ* of which our *Lecviride* is a prominent member. This bug being a soft-bodied insect it is particularly open to attack from 'lady-bird' beetles.

I am sorry to note that several of our indigenous "lady-birds" are retiring before the advance of a very pertinacious little ant (*Cremastogaster dohrni*). This insect is particularly fond of the sweet excretion from the bugs and frequents the buggy trees. As they distinctly encourage the bug, they naturally discourage any interference from predaceous insects, and that the discouragement can be most effective, can be readily proved by disturbing one of their nests. The occupants swarm out upon the intruder and give him a very unpleasant reception. These ants build large nests that have the appearance of being composed of masticated brown paper.

26. The Japanese beetle, or rather its larva—is evidently allied to the insect formerly known in Ceylon as "White Grab." Mr. Kœbele was most fortunate in finding such an efficacious remedy as the fungoid disease described on page 83 of this Report.

E. E. GREEN,

Punduloya, April '97.

QUININE PROSPECTS.

THE result of last week's public sales of cinchona-bark at Amsterdam fell considerably short of the expectations of most bark-holders, says the *Chemist and Druggist* of 15th ult. They all professed to anticipate a further heavy advance in the unit-price, and they were greatly disappointed with the actually realised average increase of 10 per cent. And as many of the importers were not disposed to accept a moderate increase on the previous market-rates, nearly two-fifths of the supply, representing some 625,000 oz. of sulphate of quinine, were bought in or withdrawn from the auction.

The result of the sale shows the powerful influence of the combined quinine-manufacturers upon the market. The position of cinchona-bark, so far as it can be judged by figures, is a strong one. The exports of bark from Java during the first four months of the year, as given on page 742 of our issue of May 8, show a decline of about 10 per cent. compared with those of the same periods of the four preceding years. The supply of cinchona-bark at Amsterdam is smaller than it has been for years, and that in London is constantly shrinking in bulk, and still more so in value. Moreover, the stock of quinine in the London warehouses, which used to be such a bugbear to the dealers in cinchona and quinine, has fallen to comparatively small proportions. On May 1, 1894, it was still 197,862 lb.; a twelve-month later it was 152,416 lb., and on May 1, 1896 and 1897, it was returned at 113,577 lb. and 84,331 lb. respectively. From the beginning to April 30 of the present year the quinine imports into the warehouses have been 11,160 lb., the deliveries 14,783 lb.

And while the supplies of quinine and quinine-material are thus diminishing in every direction, there is good evidence that the consumption of the alkaloid is again increasing. A few years ago it was feared that the competition of the new synthetic antipyretics would permanently cripple the demand for quinine, but some of the coal-tar remedies have shown themselves untrustworthy, others afflicted with disagreeable after-effects, and quinine now appears to have but little to fear from their competition.

All the elementary factors of a rising market are therefore in existence, but it does not suit the quinine-manufacturers, at this moment, to let the price of cinchona-bark go any higher than it is. The manufacturers are strong because they act in unison, while the planters and bark-consignees are weak, and fight each for his own

hand. But not quite so weak as they were. When, a year ago, the leading quinine-makers tacitly agreed not to buy at an auction, except at reduced prices, the importers were at their mercy, and accepted any offer made them rather than let their bark go unsold. Now they show a much better fighting spirit. Last Thursday their firmness was justified, for after the auctions some of the quinine-makers who would not bid at the sales tried to obtain several lots by private treaty. In no case, however, do they seem to have been successful, for there is a general belief that a higher unit is unavoidable, and must ere long be paid.

If the quinine-manufacturers should be forced to pay more money for their raw material, they may try to recoup themselves by an advance in quinine. But two circumstances stand in their way. In the first place, a goodly proportion of the quinine which was sold so cheaply during the short panic a few months ago must have found its way into the hands of speculators, who would harass the manufacturers by underselling them as soon as an advance in price set the market going; and, secondly, there are a good many independent manufacturers with whose competition the combined makers must reckon. We shall probably soon have Java quinine in Europe. On this subject there is an interesting passage in the annual report of the Agricultural Society of Soekaboemi, in Java, which has just been issued. With regard to cinchona, it is pointed out that, so far back as 1885, the Society decided to make experiments in the extraction of cinchona-alkaloids in Java. At that time, however, the intention did not go beyond the extraction of the alkaloids in a crude manner from the bark, the object being simply to save shipping expenses. At present, the report says, there are two well-equipped quinine factories at work in Java, of which one proposes to manufacture quinine only from the bark of the cinchona-plantations to which it is attached, while the other works entirely independently. The Government have undertaken to admit all materials required by the factories free of Customs duty. The Society points out how desirable it is for the owners of cinchona-plantations to send their bark to the Java factories instead of continuing to ship it to Europe in the quantities at present exported.

No doubt we shall hear more of these two factories soon. Altogether it looks as though an interesting time were in store for quinine and for cinchona-bark.

SUNDIALS.

PERHAPS, in the tea districts, says a writer in the *Planter*, there is nothing more variable than the time kept on various gardens, it being by no means uncommon to find an hour's difference between the clocks of two bungalows not ten miles apart. Sundials at each factory would do away with this at once, and making one is quite an easy matter. The first thing to do is to find the true north, and a compass is no use for this purpose, unless the variation for the place is known. The pole star is true north only twice in the twenty-four hours when it is either perpendicularly above or below the star ϵ (Greek sign) Ursæ Majoris. Everyone knows the Great Bear. The star referred to is the fifth from the "pointer" end, the third from the other.

The pole star crosses the meridian in the lower transit (*i.e.* below the Bear) on the 1st June about 9-28 P.M. (this is not absolutely correct), and four minutes earlier every evening after. The pole star is easily recognised as the first bright one in line with the pointers. The easiest method of getting the north by the pole star is to rig up two gallows with a plumb line on each, getting these lines true with the star at night, the line between them can easily be marked out at leisure. Having got the north line, a brick pillar should be built to receive the gnomon and dial, and should be carefully levelled off. The gnomon may be made of a piece of tin or painted wood being a right-angled triangle with one angle equal to the latitude of the place, *i.e.*, the latitude being $25^{\circ} 30'$, the angle at one end of the base should be $25^{\circ} 30'$. Any surveyor can mark this out, or a piece of wood or metal could be cut to the proper angles in Calcutta and sent up. A good length for the gnomon is $18'$.

The gnomon should now be placed on the pillar, the right angle lying at the north end and the "latitude" angle at the south, the side subtending the right angle being thus exposed to the sun.

The thickness of the gnomon does not matter, as it is only the outer edge that throws the shadow.

The gnomon being laid on the true north and south line should be fixed in with cement to the depth of, say, half an inch, and this carefully levelled off. Twelve o'clock (sun time) will now be shown by the shadow of the gnomon being exactly in line with its sides, and the easiest way of making the hour, half hour, and quarter hour lines, is to set one's watch at twelve, when the shadow shows that time, and rule off the shadow at each quarter of an hour. This will give the afternoon times, and if the watch is fairly correct the same game may be started at 6 A.M. the next day for the morning times. Another method is to work out the angles by logarithms—by no means an easy task for most of us.

This gives the sun time, and of course this is hardly ever quite correct, sometimes being as much as 14 minutes out. There are many tables published giving the number of minutes to be added or subtracted on each day.

For anyone who wishes to work the angles out by logarithms the following formula is given (from Surveying by J. C. Clancey):—

Let t = the distance from the meridian.
 l = the latitude of the place.
 h = the hour angle in degrees.

then

$\log \tan t = \log. \sin. 1 + \log. \tan h - 10 : h$, of course for 1 (or 11) 2 (or 10), etc. $15^\circ, 30^\circ, 45^\circ$ up to 6 o'clock, when it is 90° . Of course for the quarter hours these angles must be subdivided.

LETTERS TO THE EDITOR.

A CORRECTION.

DEAR SIR,—Your Printer's Devil has made a hash of my letter. For "one very like another in its fur" read "for one very like an *otter* in its fur." Instead of "such thieves" read "Becuficos" that come for figs.

AGRICOLA.

OTTERS IN S. E. WYNAAD.

DEAR SIR,—The following may interest some of your readers: I was working to-day among Waddee Cuddies on the side of my river, when hearing a splash I turned and saw an otter standing half-immersed on the tail of a pool. Presently a fish scooted down the stream, at which the otter made a dash but missed his prey. The fish was followed by 4 other otters. On joining forces they played about for some time, uttering faint cries and then started off down stream. I continued my work and soon the otters re-appeared. This time there were no less than *ten* of them. No wonder fish are scarce.

Yours truly,

W. HAMILTON.

GADBROOK, NELLACOTTA,
 3rd June 1897.

THE COOLY AND THE MISSIONARY.

SIR,—I was uncommonly well pleased to read in your last issue the remarks on Christian coolies by your "much disgusted correspondent." It is a subject that has remained too long unnoticed by the writers in your journal. In the particular district where I reside, we have what is facetiously called a Coolie Mission, the noble work of which and the dangers its missionaries undergo, are doubtless portrayed in the glowing style so common on Missionary platforms at home. Realities are somewhat different. The gentleman who undertakes the certainly arduous task of converting our coolies here, has a remarkably easy, not to say soft, time of it. His headquarters are in the station, where he and

his family reside in a style indistinguishable from that of another Anglo-Indian household. He himself rides about the district at intervals with generally about four times as much luggage as any planter would think necessary for the purpose. Putting up wherever possible at the bungalow, he obtains some times leave to preach to the coolies.

The way he sets about it is curious. The coolies' God is so and so Swami. Well, this Swami was an awful blackguard. He did this and he did that. And if they worship him, they must worship blackguards too. And in fact generally insults them and their religion to his heart's content. Naturally the better sort of coolies only get riled over it and want to chuck the padre down the khaddar. The only ones on whom he makes any impression are wretched lazy brutes who foresee easy work and lots of rice if they can get "converted." Before, as heathen coolies, they were bad enough but now they get infinitely worse. But I shall not go over the same ground as your former correspondent.

All I would suggest is that the Coolie Mission and Missions be forbidden the vote by all planters. It would stop a good deal of the mischief. Yet not all, worse luck.

There is a singular fatality about the Indian Missions. The religion of Christ is as pure as, if not purer than, any in the world. The Hindu converts to Christianity are generally among the most disreputable and scoundrelly members to be found in the country, and, indirectly, bring shame and contempt on the religion of the white man in this land.

ANOTHER DISGUSTED PLANTER

COST OF LIVING ON A PLANTATION.

SIR,—I have been greatly interested in several letters in the last few numbers of the "P. O." from planters, giving statements of their monthly expenses.

"Ex-Creeper" seems to have lived in an exceedingly cheap district, and I congratulate him on his economical living, though I am afraid I cannot do the same to "Indigo Assistant."

The following is a statement of my actual necessary monthly expenditure, and I think it is a fair statement of the usual expenses of superintendents in my district:—

Pay of butler (cook)	...	...	...	...	13
" " chokra	...	...	...	...	8
Bazaar 4 weeks	...	...	...	...	28
Dogs (4 as. a week for each dog)	...	...	...	...	2
Flour, tea, sugar, table salt	...	...	...	...	3
Milk 4 tins at 10 as.	...	...	...	...	2
Stamps	...	...	...	...	2
Dhoby	...	...	...	...	4
Tobacco	...	...	...	...	1
Sundries	...	...	...	...	4
Liquor	...	...	...	...	6

Total Rs. ... 76

Some may consider a chokra an unnecessary servant, and under ordinary circumstances, I think he is, but I happen to live in a district where there are a number of neighbours, and therefore having many visitors, I find a chokra indispensable.

Bazaar account includes fresh mutton (twice a week), for vegetables, sugar and salt for cooking purposes, bread, oil

My present income is, I may state, only just over Rs.100 per mensem.

The balance goes to club subscription, medicines, bungalow and toilet necessities, clothes, boots, stationery, &c.

A young planter can live comfortably on Rs.100 per mensem.

on less it is only existence. I quite agree with "Indigo enter" that planters are very badly paid (as a rule). My life a planter is a very pleasant one, and I should not like to change it; at the same time, under present circumstances, it is only vegetating. How is a man to save say even £100, at least how long will it take him to save it, on Rs.100 or Rs.150 a month? "Home" seems a long way off, does it not? And prospects look very black at present. However, let us hope that next year crops will improve, and that the prospects and pay of superintendents will likewise improve.

Yours faithfully,

A COFFEE PLANTER.

UTH MYSORE.

SHORT CROPS.

SIR,—It is distressing to see from the reports published in our last issue how general has been the failure of the coffee blossom this season.

It is the more disheartening, as last year was, generally speaking, far from a good one, notwithstanding which cultivation was in many cases increased, as a bad season is generally followed by a good one.

My object in writing is to get the opinion of other planters as to the cause of the wholesale loss of blossom, giving my own experience for what it is worth. The primary cause is in my opinion "leaf disease," which followed in my case a very heavy W. monsoon, and I may say a generally wet year, the rainfall being one-third more than the average. The disease showed itself in December and January, and in consequence only a very light pruning was given as the trees were all but leafless. In February—14th to 28th—we had 3.48 rain, and by the end of the month, such trees as had not given crop last season or had been heavily manured had set a small blossom, and the whole estate broke out in profuse growth of new leaf and wood. March passed with no rain at all, and April followed with four small showers at long intervals aggregating only 87 cents. The first week in May we got 2.45 inches, but the trees were in general unable to put out any more blossom, and the unopened buds either dropped off or just opened at the tip in the shape of "prush." Now for cause and effect: I am of opinion that the leaf disease we had in December is more likely to be the cause than the rain in February or the want of it in March and April. In October the trees looked grand: 18 inches of new wood and nearly every field and trees in good healthy leaf. At the end of January all this wood had perhaps one or two pairs of leaves left at the end, the rest having fallen from disease, and it is to be noticed that just where these leaves remained there a little blossom has set, which confirms me in my opinion that disease and not drought is the cause of the shortfall in crop. The effect of the February rains still further intensified the evil of the disease by depriving the tree of the rest it has in February and March and causing it to prematurely put on wood and foliage, when it should be naturally devoting its energies to the formation of fruit buds. Other places may not have had the disease as badly as my place and still lost the blossom, and it would be interesting to many, I have no doubt, if such men would give us their views.

Has anyone ever tried sulphate of iron as a remedy for leaf disease (*Hemeleia vestatrix*)? The increase in yield, and freedom from "sand" and other fungi in cereal cultivation, is very marked.

Yours faithfully,

PERSEVERANCE.

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contains per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Orders should be booked early for the present crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE.

COFFEE.

The San Paulo Coffee Company. This large company has been registered in London with a capital of £270,000 to obtain the Santa, Olympia, St. Joaquim and Chanaan Estates in the famous coffee district of Brazil. The vendors are a Hamburg firm. The Registered Office is 57½, Old Broad-street, E.C. When floated, some good billets ought to be going for enterprising Indian planters on the lookout to improve their prospects.

E. lithosperma: a caution. Mr. Nelson writes us, rather too late we fear, to warn planters who have this shade down, to lop them up before the monsoon bursts. As they grow so rapidly, they get knocked about by the wind in exposed situations. The best way to stop this is to by lopping and taking off superfluous leaves. Breakages by the wind, or even being blown over won't hurt them: lopping is only advised to get them as big as possible in the shortest time.

Umbrella pruning.

Surely there is something wrong about any one seriously advocating umbrella pruning on a young estate. Yet that is what we hear an old Indian Coffee planter is trying to impose on his brother planters in the Shiré Highlands. We always had an impression that it was to bad and scanty cultivation and manuring that so many old estates in this and other districts have been reduced to bear all their crop on the top. They seem to be still stumbling distressfully, do the plucky but raw B. C. A. planters.

Coffee in South India. They have some very funny ideas in Ceylon as to the extent of our coffee industry in South India. The *Ceylon Observer*, which sets itself up to be an authority on planting statistics the whole world over, gravely affirms that "nowhere is coffee King in the East." Further that "in South India it is only in Coorg and Mysore that an appreciable acreage is left." Extremely elementary notions must our contemporary have of the conditions that obtain in South India, where there are about 15 acres of coffee to every one acre of tea. It would probably surprise it to learn that the last

six years or so have witnessed an unprecedented rush for coffee land and so-called coffee land (thought formerly only fit for grazing) in every district—barring Travancore—in Madras. Coffee King no longer anywhere in the East! How about the Straits, and Java alone? Hide your diminished head, oh *Observer*.

Says the *Produce Markets Review*
of May 15th:—

The Market.

At the Dutch sale on Tuesday prices were rather irregular, but good ordinary Java sold at from $\frac{1}{4}$ to $\frac{1}{2}$ cent above the valuations. In this market the improvement of last week has continued, and although the auctions have again been very heavy there has been a good demand, particularly for export, and a further advance in prices has taken place. Low and Medium Costa Ricas have been in plentiful supply and have sold very freely, at again dearer rates, the advance for these qualities from the lowest point being fully 6s. per cwt. There have been very few parcels of fine Costa Rica offered, and it is now quite evident that, as over 100,000 bags of this description have passed the hammer this year, very little more of fine quality is likely to be received. East India has been in good demand, and has sold freely at the recent advance, Naidoobatum being about 3s. dearer than a month ago. In the terminal market little has been done, and quotations are hardly changed.

LONDON COFFEE RETURNS.

—	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended May 8, 1897.	Tons. 422	Tons. 356	Tons. 593	Tons. 817	Tons. 13,794	Tons. 12,442
For the 18 weeks ended May 8, 1897.	5,181	5,406	6,143	7,861	—	—

Missionary planters in Liberia.

There is not much danger of over-supply from the Missionary plantations in Liberia apparently, if the following letter by Bishop Hartzell, of the Methodist Episcopal Church, U. S., to the *New York Christian Advocate*, is as true as it seems to be. It has taken ten years to produce 200 dollars worth of coffee from 45,000 coffee trees originally planted!

The movement inaugurated by Bishop Taylor ten years ago for a great advance among the native heathen of Liberia will stand out in history as one of the really heroic movements in missionary annals. In ten years fifty stations were opened and eighty-eight missionaries brought from foreign countries, most of them being from America. In the effort toward self-support fully 45,000 coffee trees have been planted, and large expenditures made in the way of stock, fencing sugar mills, transportation, etc.

Of the fifty stations opened twenty-nine are now occupied. Two which had been opened on the east side of the Cavalla River were abandoned because of the French taking the territory. Of the twenty-nine now occupied fully one-half, for lack of workers and means, are doing but little.

Of the 45,000—probably 50,000—coffee trees planted, scarcely 15,000 have been saved, being choked to death by grass and bushes. American farmers can have no conception of the abundance and rankness with which vines and bushes grow in this country, or with what rapidity buildings will disappear. Leave a well cultivated farm to itself three or four years, and every vestige of the buildings, except the stones and the few hard native timbers used, will be gone,

eaten by insects; and the land will be one mass of vines and bushes so intertwined and tangled that to pass through them is impossible, except as natives cut the way before you. It requires much labour and expense as well as business push and judgment, to open and maintain a coffee farm in Liberia.

I have visited our best stations and made diligent inquiry of those in charge of others, to find out how much coffee will probably be sold from the twenty-nine stations now occupied this year. The amount will certainly not exceed \$200, and half of that from Barraka our best station.

Jamaica coffee seed.

We wish this to attract the especial attention of our readers. It will be remembered that some months ago we brought prominently to notice the urgent need of replacing our once healthy but now exhausted and diseased seed-strains with pure and sound stock. The Director of the Kew Botanical Gardens, to whom the matter was referred for advice, urged that we should import seed from the prolific and healthy growing trees of Jamaica, the produce of which was a finer and heavier bean than any in the market, fetching prices about fifty per cent. above the East Indian marks. Dr. Thistleton Dyer was also good enough to give the name and address of a reliable Jamaica planter: Mr. Beresford S. Gossett, Farm Hill, Hagley Gap. P. O., Jamaica. On writing to him this gentleman affords the following information:—

"I have had some enquiries about coffee for seed from India and Jamaica. We have no disease here among our coffee trees, and therefore do not care to import coffee seed, in fact it is prohibited by law to do so. I could send High Mountain coffee seed in 3 bushel barrels to Liverpool in June and July when I ship my coffee crop. My price would be £6 a barrel for parchment coffee and £5 a barrel for dried cherry coffee, cash on delivery. My best quality manufactured coffee netts from nine to ten pounds a barrel in Liverpool, so the price I name will barely pay me. The coffee would be selected from the best pickings and specially cured for the purpose."

It will be seen that the price per bushel landed in India would only be slightly higher than local seed, and in all probability the seed would be far better value, despite its lesser germinating power. We would strongly advise planters to make a trial: the cost is slight, and the possibilities are very great. Our readers will pardon us if we venture to sum up the position as we understand it. It may be taken as a generally accepted fact that coffee used to be planted (save the mark) in an outrageously crude manner, and yet despite all throve from the very start far and away better than the best opened clearings do now. To what is the impaired vigour of the seedling and mature plant due? Can there be any doubt that it is to be clearly traced to inherited disease: diseased progeny from diseased trees?

Jamaica coffee is, it is true, not immune to our dreaded leaf-disease, when grown under our local conditions. Yet the seed itself being healthy would almost surely produce a far healthier plant than that from diseased seed. Consequently it would throw off the attacks of leaf sooner and easier than indigenous plants.

Wherefore again we say: give the matter full consideration and a trial.

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.,
(SOMETIME AGRICULTURAL CHEMIST IN COORG, SOUTH INDIA,
TO MESSRS. MATHESON AND CO.)*

(Reprinted from the "Madras Mail.")

IV.

APPLICATION OF COFFEE MANURES.

HAVING selected the manure, or manures, intended for use on the coffee estate, the question is how to apply it, so that the maximum results may be produced at the minimum outlay. First, to ensure equitable distribution, it is necessary to dilute such concentrated manures as bones, fish, hindy, and other artificial manures with cattle manure or burnt earth. If cattle manure is procurable, it may be used with advantage at the rates of two or more bandy loads mixed with artificials per acre. Where there is not sufficient, burnt earth is the best substitute. The following analyses show the change produced by burning a soil:—

	Parts per hundred.	
	Conditions natural.	Burnt.
	A.	B.
* Organic matter and combined water ...	7.572	.623
Oxides of iron and alumina ...	10.369	14.345
Lime ...	.253	.499
Magnesia ...	.161	.196
Potash ...	.070	.389
Phosphoric acid ...	.026	.096
Sulphuric acid ...	.159	.289
Insoluble silicates, etc. ...	81.367	83.494
	100.000	100.000
* Containing nitrogen ...	.180	.005

The burning has practically destroyed all the organic matter and nitrogen. It is rather over-burnt, but has rendered some of the insoluble silicates soluble; the increase in potash in analysis B partly due to that and partly to the wood used in burning; so with the lime, etc. At least one cubic yard of burnt earth, or 1 ton of cattle manure, should be mixed with every 4 cwt. of artificials. This, at the rate of 4 cwt. of the latter per acre, gives about 21 lbs. per tree. To prepare the burnt earth select good yellow clay, or peaty swamp soil; cut it into six to nine inch clods; dry them in the sun. About six cubic yards should be cut for every ton of manure that is to be mixed. The clods when dry are built up into a heap with layers of brushwood (coffee prunings and shade loppings will do); a little heavier wood should be used at the bottom to start the fires. It is a mistake to use too much wood, or to allow the heap to burn too rapidly. Instead of actually burning it should smoulder gently. A heap ten yards long by two high, and five broad should take about three weeks or a month to burn. The earth should not be red when burnt, but just in part beginning to turn red; if of a nice warm brown colour when finished it is excellent. If the fires are going too fast plaster the outside over with mud. It is rather good than otherwise to have a fair percentage of charcoal left in the heap, especially if the manure is intended for poor sandy soils.

When the heap has cooled down break up all the clods and pass them through a screen with four meshes per linear inch; better results will be got if a 16 mesh screen is used, but the cost of pulverising will be considerably increased. It is now ready for mixing with the manure, and the following plan will be found best. Upon a clean, dry floor, or barbecue, spread a layer of two inches of the prepared earth (or dry cattle manure pulverised will do) upon it, over this a layer of bones or other artificials about half an inch thick, over this two inches burnt

earth and so on, earth, manure, earth, finishing with the latter. When the heap is about 12 to 15 inches thick, turn the whole over first from one end, then from one side, then the other end, and then the other side, finally from the four corners throw the stuff up into a heap in the centre, and carefully turn it over twice. Then pass it through a screen, and again turn it over. This is necessary to ensure an equal proportion of manure throughout the mass. If thoroughly well done, a sample drawn from any part of the heap should show on analysis the same composition as a sample drawn from any other part. It is now ready to cart out to pits which should be cut one for every five acres—a convenient size is $4\frac{1}{2}$ feet deep, 6 feet wide and $7\frac{1}{2}$ feet long. When these are filled with the mixed manure they should be covered with about a foot of dry earth and thatched over, a gutter being cut round to run off the monsoon rain. If raw bones are used it is sometimes advisable to sprinkle water over the manure as it is put into the pit to facilitate fermentation. Having the manures in pits obviates the necessity for cartage when the roads are soft. The manure can be prepared and carted out in the cattle manure weather. The manure should be got out as soon after the heavy monsoon rain is past as possible. If put out just after crop it is exposed for months to a blistering sun, followed by 20 to 25 inches of rain in June and July. With a monsoon of say 66 inches over 6,690 tons of water fall on an acre of land, sufficient, if all fell at once, to submerge the whole district to a depth of 5 feet 6 inches. Of this enormous quantity about 1 to 2,000 tons fall in June and 1,500 to 2,000 in July. During these two months the rain is generally so continuous that only a very small proportion is evaporated, the temperature only varying from 60° to 70° Fah., the barometer almost steady at 29.5 inches, and only about 3° between the wet and dry bulb thermometers. The bulk of the rain must therefore pass off by surface or subsoil drainage. In either case this heavy downpour will wash all the soluble salts down below the feeder roots, or carry them off with the surface wash; at any rate a very large loss must occur, and this is probably the reason why such a small percentage of potash is found in tropical soils. The following experiment proves that such is the case. 20 lbs. cattle manure, or rather pure dry gram-fed cattle dung, was placed in a basket which was buried in the ground up to the rain in such a way that it was not exposed to surface wash, but was as nearly as possible under the same conditions as the surrounding soil. To preserve the basket it was carefully washed with a solution of arsenite of copper and then tarred. It was left exposed for four months, viz., May, June, July and August. The dung taken out dried and weighed was found to have lost 22.5 per cent. in weight and deteriorated in quality over 50 per cent. The following analysis of pure dung before and after exposure make this clear:—

	Before.	After.
† Organic matter and combined water ...	65.86	62.51
Lime ...	1.87	1.49
Alkaline salts ...	1.31	.48
Phosphoric acid ...	.90	.83
Iron and alumina ...	1.08	1.39
Insoluble matter ...	28.60	33.03
Undetermined ...	.38	.27
	100.000	100.000
† Containing nitrogen ...	.547	.212

Should these figures fail to convince anyone, let him just look at the rush of water over and off the surface of a piece of flat land such as a tennis court, or a road, when a thunder-storm of an inch or more rain falls in an hour, or when there is a pucca burst of the monsoon rain registering 4 to 6 inches in 24 hours, and I think he will agree with me that it is necessary to supply the tree with easily assimilable food as soon as possible after the heavy rains are past to compensate for the monsoon loss. I cannot too strongly urge the planters of Southern India

to put out their manures during the first break at the end of July or in August. All other work should be subordinated to this, even supplying. It is the crop that pays for that and every other work. If labour is obtained there is plenty of time for supplying, but the time at which manure can be most economically applied to obtain maximum results is very limited. The coffee tree is a surface feeder, and unless the land has been deeply cultivated from the beginning, and is of loose and friable character few feeder roots are found below 6 inches, in comparison with those above that depth. This points to the necessity of surface broadcast manuring, by which I mean that in good coffee free from blanks, the manure should be evenly scattered over the surface up to within a foot of the stem or thereabouts, and lightly forked in.

An account of an interesting experiment first devised by Nobbe will, I hope, satisfy you of the necessity for distributing the manure evenly round the tree; any planter can make the experiment and so satisfy himself of the correctness of the following statements: Take a good sized tub, say 2 feet in diameter by 2 feet deep; bend a piece of tin plate (an old kerosine oil tin will do) at an angle of 90° and place it on end, the tub fitting so that it is possible to fill the tub with the well washed sand without encroaching on the enclosed fourth. Bore some holes in the bottom of the tub, fill in with clean, well washed pebbles or broken quartz, pieces about one inch cube will do; fix the tin in position, fill with the cleans and outside the tin, and in the enclosed fourth fill with first class soil, arranging in it three tubes vertically about three inches apart, and equidistant from the centre. The tubes should not be over two inches in diameter; they may be of tin, copper, glass or any other material, stiff paper rolled round a rod and glued so as to form a tube will do. Compact the soil gently round the tubes, and fill one with bones, one with fish, and one with cattle manure or hindy, all in fine powder. Now withdraw the tubes, leaving the columns of manures standing in the soil; and then withdraw the angle tin, leaving the soil and sand in contact; if the work is well and carefully done the manures will not be mixed with the soil, nor the soil with the sand. Having prepared the tub, or six of them to be prepared for accidents, plant a coffee seedling in each at the centre point of the junction of the sand and soil. The plant then has sand on three sides and soil on one. At the end of twelve months take the plant that appears most vigorous, knock off the hoops of the tub, and carefully wash the soil and sand away from the roots; you will find very few feeder roots in the sand, while the manures are surrounded by a mass of them. As far as the roots go the plant is quite lopsided.

Now, if manures are put in alavanga holes, or in trenches cut a short distance from the tree; the roots are prepared to grow and develop in the soil enriched by them. But that terrible weapon the mamotie comes into play, and often cuts through the roots just when the demand for plant food is greatest; when the tree is ripening crop I most unhesitatingly condemn all mamotie digging. I have taken clods of earth after a mamotie digging, carried them home, and washed out the fine feeder roots, often finding the clot to be one mass of them. Needless to say on many estates leaf disease followed a mamotie digging when the trees were carrying crop. Except a light forking over at the end of July or the beginning of August, when the manure is put out, there should be no digging from the time blossom sets till crop is picked. Every planter should do all he can to preserve his surface soil, and save his tree roots. When the soil is light and friable, and has been deeply and well cultivated from the beginning, the feeder roots will be found at a much greater depth than when it is stiff and hard a few inches from the surface. Deep fork digging once a year, just after crop sends the roots down and they are less affected by the sun and drought.

When the rain falls in the spring if the feeder roots are just

below the surface, a light shower will start the blossom, but may not be sufficient to set it, and if no more rain falls for a month or so to back the first shower up, the blossom runs a great risk of being burnt. With deep cultivation this seldom happens, as the rain which is sufficiently heavy to reach the roots and bring out the blossom will also serve to set it, the sun not having the power to evaporate the moisture which is well done in the soil. Superficial cultivation and want of manure are the main causes of failure of crops to come on after a good blossom, for the rain has run off and been evaporated before the trees had time to gather it to themselves. Cultivate deeply, but not excessively. Manure systematically, at the right time. Keep the surface soil up to the tree. Don't humbug the roots by mamotie digging while crop is on the tree. In fact, assist Nature, do not bully her, and good results may be depended on.

TEA.

Japanese Tea campaign

Perhaps the following item will rouse doubters of the value of the Indian Tea Fund to a sense of their duty:—

Taking a leaf out of the book of the enterprising Ceylon tea planters the Japanese have determined to spend 57,200 yen (dollars) in pushing their teas in United States and Canada, and 10,000 yen in Russia—advertising, free distribution of samples, &c., &c.

South Indians.

Messrs. Arbuthnot & Co. (P. Macfadyen & Co.) in their Monthly Report, dated London, 14th May, say:

South India.—About 1,900 packgs. were brought forward in April realising 7d. per lb. against 3,800 packgs. in the corresponding month of 1896, when the average obtained was 7½d. per lb. In March this year 2,600 packgs. also brought 7½d. per lb.

Travancore.—As usual the majority of the offerings were from this district. Some invoices with useful cup were included in the catalogues, but a good proportion consisted of poor liquoring sorts, drawing dull infusions which realized low rates owing to the full supply of these grades from other quarters. Several of the shipments also were somewhat mixed and brownish in appearance.

Neilgherry.—Only three invoices were catalogued and were all of ordinary quality as though flavoury in cup they were somewhat deficient in strength.

South Wynaad.—An invoice from Erramenvella represented all that was available from this district, and as usual the tea from this Estate was of a saleable character.

The duty in America.

The Yanks are going to follow the Canadian example of imposing a tax on tea, according to all accounts. Curiously enough it has escaped all taxation hitherto, despite it being termed a "luxury." The 10 cents tax proposed (about 5d. sterling) would bring in an income of eleven million dollars, so that it will be passed into law is scarcely to be doubted. What effect it will have on the consumption of tea is doubtful. As a whole, it will tend to restrict imports, but on the other hand will by all rules of logic act as a preferential duty on British-grown teas, inasmuch as a tea intrinsically worth 7d. gives a better value at a shilling than one worth 4d. and selling at nine pence. Yet as trade is not wholly governed by logic, it is too early to begin crowing.

Mr. Crole's Tea Book.

Through regrettable delay our copy of this work not yet being to hand we were interested in the perusal of an able review thereof in the *H. & O. Mail*. When we add that from interna

evidence the able pen of Mr. Christison, the well-known Darjeeling planter, bewrayeth the writer, it will be seen that the critique was entrusted to thoroughly competent hands. The book, (published by Crosby, Lockwood & Co.,) is illustrated throughout, and seems to be chockful of highly interesting and valuable matter, light and grave, theoretical and practical. The statistical portion is open to grave question, it appears, as Mr. Crole's estimate of 912,500 acres of British grown tea under plant seems well over the mark. A safer and more accurate estimate would be 850,000 acres at the present time. Mr. Christison very naturally falls foul of the author for his sweeping condemnation of the China plant, urging that in Assam it never had a fair chance, and points to Darjeeling as a proof if its inherent capabilities if properly treated. He mentions incidentally that the quality of the soil has much to do with the quality of the tea. A score, this, for the manurists. The critic also takes strong exception to Mr. Crole's ideas of what he considers modern machinery. His remarks on certain practical matters are worth quoting at length:—

In the interests of the tea industry we feel bound to notice a few recommendations which are fraught with danger. The best distance for planting a garden is said to be 4ft. by 4ft. = 16ft. (or even = 13.85 superficial feet of space per plant if planting triangularly as recommended). This is opposed to all sound principles of planting. On the contrary, for fully developing the capabilities of a garden, in the long run, for Assam we should say twice this space, at least 6ft. by 5ft. (and for the hills say 5ft. by 4½ft. on the base) should be allowed; and with a view to cultivating by machinery, as advocated by Mr. Crole, even lines wider apart would be an advantage. Mr. Crole remarks that hoeing should always leave the soil rough. Clod cultivation—or as in some cases as practised it might even be styled slab cultivation—is a great fallacy in tropical culture, especially when lengthened periods of dry weather may be expected. Pruning by measure is reprehensible (as well as antiquated, surely) and is not in some instances the leaving of heavily cut bushes unpruned next year, certainly the “slashing them across the top;” worse still to burn down root and branch as a remedy for mosquito blight, a cure certainly infinitely worse than the disease. The eliminating of all *banji* leaf, as advocated, not only unduly weakens all except the most robust bushes, but deteriorates the quality of the after flushes. In these days, when quality above all should be aimed at, it is objectionable and entirely unnecessary to handle all the tea, or any but the coarser, in sorting; and we cannot agree with the author (though the majority may yet do so) that tea deteriorates (but the very reverse) in properly constructed “bins.” Neither ought chests to be packed to contain so much as 150lb. of tea, but we would rather name 95lb. or at most 100lb. as the net limit. We are confident that tea ought to be bulked at the factory, not only because there it can be best done—considering the present methods and appliances at the London warehouse—but to curtail the warehouse charges as exemplified in the profits of 45 per cent. and 80 per cent. consecutive dividends from one warehouse company shown in some tea company's printed accounts.

Machine-made Chinas. A good deal of ridicule has been cast upon the recent attempts of China to improve her teas by adopting modern methods and machinery. So it is of interest to know what the *Grocer* thinks about it. In a recent issue it said:—

A few small breaks of machine-made Black Leaf were included in the auctions, this being the first consignment of Tea made in this form from the Northern ports. Considering that the leaf used was of an ordinary character, the experiment has demonstrated the fact that China is able to produce Tea of a really strong flavour, and we

look forward with a good deal of interest to see what can be done with first crop growths treated by the new method.

Again, in another issue:

Yet, notwithstanding all that may be observed to the contrary, there are still some old-fashioned people who like China tea, and, preferring it to any other, will have it while it is at all possible; and for this class of consumers at least the beginning of a new season is decidedly hopeful. Especially is this so at the present time, when ‘machine-made’ teas from China will be subjected to their severest test. Till now they have been regarded merely as an experiment, having first come under notice in November last, when we spoke of them as showing ‘an improvement on the old style,’ also as being both ‘strong and pungent,’ and seeming ‘to meet with approval.’ If half what one hears of these teas be true, they are likely to prove the great feature of the coming season, and should be the means of partly restoring China growths to a healthier position than they have stood in for many years past. In manipulating China teas for native use or exportation, the worn-out plan was to dry the leaves as they were plucked, first in the sun before finally preparing them for market; but it is said the new method recommended and adopted is to avoid the preliminary process of drying the leaf in the open air, and carry the freshly gathered leaves, full of their natural sappiness and moisture, straight to the pans or sheds for ‘firing,’ curing, and being ‘machined,’ preparatory to packing them for sale and shipment to foreign markets. China teas, which have become less and less a speciality with the home trade here, may, if made stronger by the new mode of manufacturing them, compete with the productions of India and Ceylon, the latter particularly; for, besides the newly-treated teas being more suited to the modern requirements of the British public of to-day, they are just what are wanted by shippers to the European continent and elsewhere, who must secure teas of some richness and strength, or they will not please the drinkers of the beverage there. Weak, flat, insipid, and thin-liquoring teas are, it appears, practically out of the running; and the smaller proportion they bear to the aggregate supply the livelier will be the demand and the more satisfactory the price for all teas of a finer and superior grade.

On the other hand, we have seen it stated by a jubilant Indian or Ceylon planter, that he recently submitted some of this very same machine-made tea to a bevy of ladies in London as arbiters of its quality. One and all pronounced it utter rubbish!

The Home Market. The quantity of Indian tea offered has only reached a total of 15,967 packages, against upwards of 25,500 last week, says the *Produce Markets Review* of 15th ultimo. A considerable portion of the supply still consists of the common kinds, including a number of parcels withdrawn from previous sales. The demand for these shows no improvement, and, although prices favoured buyers, a large quantity was withdrawn, the leaf being too red and the infusion very poor. Although the trade look for an increasing proportion of these teas at this time of the year, the quantity of the past season's crop is much in excess of any similar period, and it is evident that prices must further recede if holders desire to realise before the arrival of the new crop. There was good bidding for the better medium kinds, values being well supported, and unless there is a continuance of a fairly liberal supply, a firmer market for these appears inevitable. The finest sorts have been poorly represented, only about 570 packages out of the above quantity having sold at 1s. and over, for which firmer rates were realised. The extremely low prices which the medium and lower descriptions of broken tea and dust have touched have stimulated the

HYDROCELE & ASTHMA. Instant relief! Permanent cure guaranteed or the Price (Rs. 5) refunded. Don't despair even if in the last stages. Apply to—MANAGER, V. C. WORKS, Ranaghat, Bengal.

inquiry, and a larger business has been transacted than for some time past. Where these teas can be used for blending, the present would appear a favourable opportunity for securing a fairly good working stock, as values are so extremely low that it is questionable if there will be a further depreciation within a reasonable period. The market for Ceylon tea is steady, and continues to be well supplied, but there is a dearth of teas possessing both quality and strength, and in many cases this week a marked falling off was noticeable as compared with previous invoices. Broken Pekoes under 9d. are still in excess of requirements, and former prices have been barely maintained for these kinds, especially in the case of parcels which give an inferior infusion. The low rates for these descriptions are attracting more attention, as this class of tea is certainly the cheapest now offering. Pekoes and Pekoe Souchongs generally show no change, and were readily taken at last week's values.

DIGESTED TEA NOTES.

PROXIMATE CONSTITUENTS.

I BEGIN to feel as if my attempts at digestion were getting slightly dyspeptic: chemical food tries the mental stomach of a planter not a little. But to my "proximate constituents." These are defined by Mr. Bamber as the various substances formed by the chemical elements described in my last paper. To make my readers get a slight idea of what they are tackling when they attempt tea manufacture, I give the following table of analysis without compunction. The list shows the organic constituents of the tea-leaf, some of which are soluble in water either wholly or partially, while others are insoluble.

<i>Essential oil</i>	... 05%	Pectin	... 12.60%
Fixed oil	... 50%	Amides	...
<i>Theine</i>	... 4.10%	Cellulose fibre, &c.	... 21.20%
Volatile alkaloid	... trace.	Phlobaphene }	...
<i>Tannin</i>	... 18.15%	Resins, &c. }	... 7.85%
Boheic acid	... 2.34%	Mineral matters	... 4.50%
Gallic acid	83%		
Legumin	... 24.00%		100.00
Albumen	... 1.00%		
Waxy & gummy matters.	2.88%		

The names in italics: essential oil, theine and tannin, denote the most important constituents affecting the quality and strength of tea.

Essential oil.

This varies, but is always limited in quantity. Slowly grown hybrids or Chinas contain most, as a rule. When checked by cold or blight Indigenous also shows an increase. The flavour and aroma of tea being largely due to this oil, its importance is very great despite its minute proportions. Like all essential oils, it gradually dissipates into the air, explaining the loss of aroma in air-exposed tea, and emphasising importance of immediate packing after manufacture. Exposure to air also probably induces oxidation of oil to an insoluble resin. The oil is present in the green leaf but is greatly increased in quantity during manufacture. There is probably a slight chemical change during process of withering, as when the leaf is properly withered it has an aroma closely resembling that of the oil when isolated.

Theine

or Caffeine is the chief alkaloid in tea, and is also found in coffee, cacao, Paraguay tea, and Guanana. To theine is due the use of these articles as a beverage, owing to the refreshing properties of the alkaloid.

Theine forms white needle-shaped crystals of a silky lustre, soluble in water and spirits; are bitter, fusible and volatile. It apparently undergoes no change in manufacture. The quantity varies from 3.22 to 4.66% in Indian and Ceylon Teas. Many attempts have been made to discover a relation between the percentage of theine and its commercial value, but except in France, with no great success. Tea is now valued by colour, taste and appearance, none of which are appreciably attested by theine. Tea hair or fluff contains 2.50% of theine. Were some simple method of sublimation employed, the large quantities of Tea fluff now wasted in every factory could be profitably utilised. Some years ago theine was worth Rs.15 per pound in Europe, but the price has since been greatly reduced. It was and is usually obtained from damaged or waste Tea. The alkaloid is used medicinally.

Tannin

or tannic acid is the chief factor in the strength and pungency of Tea, and is found in greatest quantity in free-growing plants. Tannin gives a slightly acid reaction, and an astringent but not bitter taste. On exposure to air tannin combines with oxygen and forms insoluble compounds, thus "mellowing" the Tea in process of time. Dr. Hooper found that the quantity of tannin was not influenced by the quality of the tea, or by the altitude at which it was grown. It is probable that the "fulness" of Tea, as distinct from its "pungency," is due to the gums dissolved as well as the tannin and other soluble matter. The amount of tannin, however, varies with the light and shade given the plant, light and carbonic acid being the essential agents for its formation. Only green leaves are capable of forming tannin. On my own responsibility I would add that very light-coloured leaves (the want of green being due to bad soil) would by application of manure be rendered dark in colour. Consequently the tannin would be more abundant, as, I think, has already been proved by the Ceylon manuring experiments. The chief use of tannin acids in plants is said to be as carriers of carbohydrates from one part of the plant to another.

Other constituents.

Gallic acid adds slightly to the astringent taste and is partly produced in manufacture from a decomposition of the tannic acid. *Boheic acid* undergoes little change in manufacture, except by darkening in colour when nearly dry. *Legumin* is only slightly soluble in water. *Resins* are insoluble in water, consequently have no effect in the strength of the Tea. *Wax* is insoluble in water and its main use seems to be as a covering to the green leaves to prevent too repaid evaporation. Hence by tossing the leaf in the Chinese fashion withering proceeds more rapidly. *Mucilage*, i.e., Pectin, pectoses, &c., are present in comparatively large quantities and assist in giving thickness to the liquor. The creaming of Tea is apparently partly due to this mucilage.

Here, I am glad to say, and I fancy my readers will incline to agree with me, the chemical or strictly scientific portion of my Digested Tea Notes ends. My next paper will be on Cultivation.

DISTRICT ASSOCIATIONS.

SHEVAROYS.

PROCEEDINGS of the Monthly Committee Meeting held in the Victoria Rooms, Yercaud, on Monday, May 17th, 1897, at 1 P.M. Present: Messrs. R. Gompertz (*Chairman*) C. G. Lechler, E. H. King-Harman, Rev. J. M. Kempt, Messrs. C. Sice. H. W. Leeming (*Hon. Sec.*), and Mr. C. Dickins as a *Visitor*.

1. Notice calling the Meeting was taken as read.

2. Read Circular, dated 20th April, 1897, from the Secretary, U. P. A.S.I., re Individual Membership to U.P.A.S.I.

Resolved "that the discussion be postponed till next Meeting, when Members, wishing to say anything on the subject, are requested to bring their views in writing."

3. *Read* Circular, dated 28th April, 1897, from the Secretary, U.P. A.S.I., *re* Proxies for U. P. A. S. I.

Resolved "that this Meeting is entirely opposed to an 'open' Proxy, as it thinks that the Form of Proxy adopted at the last Annual Meeting is sufficient, provided that, as it supposes, more than one subject can be specified without invalidating the proxy."

4. *Read* Letter, dated 8th May, 1897, from MR. C. G. LECHLER, *re* the erection of Sheds for the Storage of Manures, etc., at the foot of the Salem Ghaut.

Resolved "that MR. LECHLER be requested to prepare a Scheme showing the amount of money required for the purchase of the land and for the erection of the Sheds, &c."

5. *Read* Letter, dated 27th April, 1897, from MR. J. N. BOSEN, on account of MR. A. G. NICHOLSON, complaining of the delay in sanctioning repairs to a Public Road.

Resolved "that the Honorary Secretary be requested to write a formal letter to the Collector, drawing his attention to, and deprecating, the delay in this and similar instances."

6. *Read and recorded* Circular, dated 12th May, 1897, from the Secretary, U. P. A. S. I., enclosing G. O. No. 464, dated 27th April, 1897, on the "Malarial Parasite."

7. *Read* Circular, dated 12th May, 1897, with suggestions from MR. S. A. HARRIS, Honorary Secretary, S. Mysore P. A.

(i). That a Scientific Investigation should be made into Hemeleia, Vastatrix.

(ii). As to the division of the Funds of the U. P. A. S. I. between the Tea and Coffee Interests.

Resolved "that these matters lie over till next Committee Meeting."

8. The following Papers were laid on the table:—

(i). A List of Agricultural Implements and Machines which have been tested in India during the year ended 30th September, 1896.

(ii). Report on the operations of the Dept. of L. R. and Agriculture, Madras Presidency, for the Official Year 1895-1896.

(iii). Proceedings of a General Meeting of the Central Travancore Planters' Association.

(iv). "Planting Opinion" for May 15th, 1897.

With a vote of thanks to the Chair the Meeting terminated.

ROBERT GOMPERTZ,

Chairman.

HERBERT W. LEEMING,

Honorary Secretary.

WYNAAD.

PROCEEDINGS of a Special Meeting at Meppadi Club on Wednesday, May 19th, 1897. Present:—Messrs. Day, de Fonblanque, Handley, R. Lamb, Mackinlay, J. R. Malcolm, Robinson, Taylor, Trollope, Waddington, Winterbotham, and Hockin, *Honorary Secretary*. MR. WINTERBOTHAM in the chair.

Roads.—Read correspondence between Honorary Secretary and Mr. G. Romilly. The meeting cordially approved of the letters read and resolved to await the result of the action taken thereon.

The Honorary Secretary was also requested to write the Malabar District Board Engineer requesting steps may be taken at once to temporarily secure the Talipoya Bridge.

Small Change.—The Honorary Secretary was requested to write the Collector of Malabar pointing out that no small change is now available at the Vayitri Sub-treasury and to ask that steps may be taken for the supply of at least 5% of small change on all Money Orders.

Treasury Drafts.—The Honorary Secretary was instructed to address the Accountant-General, Madras, requesting that he would grant drafts on the Vayitri Treasury on the same terms as he did for Coorg and other planting districts.

A vote of thanks to the chair closed the proceedings.

(Signed) H. B. WINTERBOTHAM,

Chairman.

(") J. WILLIAMS HOCKIN,

Honorary Secretary.

NATURE SLOWLY MAKES READY.

You have probably never seen a volcano in eruption. It is a magnificent spectacle. Where do all those torrents of red-hot lava come from? Nobody can tell, except that they come from somewhere down deep in the earth. But one thing we know, namely, that eruptions of any one volcano are far apart. Between whiles Nature is getting ready for them; she is preparing for the tremendous demonstration.

Just so it is with all her processes. In the cold of winter she is arranging the forces which are to make the heat and the harvests of the following summer and so on.

From May, 1890, to February 1892, is a period of twenty-one months. The two dates will long remain clear in the mind of Mrs. Martha Bowles, of 182, Llangyfelach Road, Morriston, near Swansea. For the first was the beginning and the second the ending of an experience which was bad enough in itself, yet only the introduction to something vastly worse. It was like the time of getting ready for a great trouble to come.

Her first sense of this was indefinite and vague, like the low muttering of thunder below the horizon while the skies are yet clear. She expresses it thus, in the very words most of us use on similar occasions, "I felt that something was wrong with me—something hanging over me."

Ah! dear me. How often we think such feelings are a warning sent to the spirit, when in fact they are caused entirely by the condition of our bodies. She felt heavy, languid and tired, and mentally depressed. This was not only melancholy to her, but new, as she had always been strong and healthy. Then came the discomforts which there could be no mistake about. They are common enough to be sure. Oh, yes. But isn't that all the more a reason why we should understand what they mean? "Certainly," you will say.

Well, then, there was that bad, offensive taste in the mouth, that so many of us have had; the failure of the appetite, and the pain in the chest and sides after eating. The worst pain was in the right side, where it was very heavy. That pointed to the liver, which is located on that side; and when anything ails the liver it is as though the big water-wheel of a mill had got fixed so as not to turn round. For the liver does half a dozen kinds of work, and when it strikes work the rest of the organs take a sort of rainy holiday.

Presently her skin and the white of her eyes turned yellow as autumn leaves. That meant bile in the blood; the liver was off its duty; that is a sure sign. The kidney secretion was the colour of blood instead of a clear amber, which meant that the trouble had already reached those important organs. Then the stomach was upset and refused to take kindly to food—as though the miller sent your grain back, declining to grind it. She vomited a sour, bitter fluid, which was acid bile, away out of its proper track. On and on along this line, constantly getting further and further from the happy land of health; this was the history of those twenty-one months—all bad enough, yet all preparatory for worse ones.

"One day in February, 1892," she says in her letter of August 18th 1893, "I began to have dreadful pain and cramp. It began in the right side, and extended across the stomach. For hours together I was in the greatest agony. What I suffered is past description. When the pain eased a little I was cold as death and shivered until the bed shook under me. I had hot iron plates applied to my feet, and held hot irons in my hands, but nothing gave me much relief. My stomach was so irritable that I could keep no food on it. I was now confined to my bed, and the doctor attending me said I was passing gall stones. He wanted me to go to Swansea Hospital and be operated upon, but I was afraid I might not live through it."

"I next had two other doctors at Morriston and also three from Swansea, who all gave me medicines, and said nothing more could be done for me. For six months I lay in bed undergoing the greatest agony; never free from pain more than two or three hours at a time. During the whole of this time I was fed on nothing but milk and water. I had scarcely any life or strength left in me. All who saw me said I never could by any chance get better in this world."

"I lingered on like this until August, 1892, when my daughter brought me a book telling of Mother Seigel's Curative Syrup. In this book she read of a case like mine having been cured by this

medicine. My husband got a bottle from Mr. Bevan, the chemist, and after taking a few doses I felt a little relief. I kept on with it and soon the pains left me, my appetite returned, and my food agreed with me. After taking the Syrup for three months I was a new creature and strong as ever. I can now eat anything, and nothing disagrees with me. After I was well our minister one day said: 'Mrs. Bowles, I never thought to see you alive.' I said, 'Mother Seigel's Syrup saved my life.' You may publish my case, and I will gladly answer inquiries. (Signed) Martha Bowles."

This case—one of acute indigestion and dyspepsia, with liver and kidney complaints—is well known in the district. The lady's husband is a gardener, well known and respected.

Do we need to point out the moral of this wonderful cure? No. You can see it for yourself.

MADRAS RAILWAY COMPANY.

SURPLUS STORES FOR SALE.

The Madras Railway Company have for sale a large quantity of useful stores, machinery and plant of various descriptions, some of which are specified below:—

Augers, screw and shell, of sizes.
Blocks, wooden, of sorts and sizes.
Blocks, iron, galvanized, of sorts and sizes.
Balances, Pooley's, to weigh 400 lbs.
Beak, iron, large.
Belting, Leather.
Bevils, Sliding.
Bolts, screw, with nuts.
Brushes, platform, with handles.
Chisels, of sorts and sizes.
Chains.
Cramps for drilling rails.
Compasses, proportional beam and Napier's.
Diving Apparatus.
Emerald green, ground in oil 28lbs. kegs.
Files, of sorts and sizes.
Forges, portable, with bellows.
Glasses for semaphore, of sizes.
Glasses, crown, of sizes.
Gauges, of sorts and sizes.
Hinges, brass and iron, of sizes.
Iron, angle, of sizes.
Iron, flat, of sizes.
Iron T, of sizes.
Lamps, of sorts.
Measures, Tin, Oil, graduated.
Nails, iron.
Paints and powders.
Planes, of sorts and sizes.
Paste, black, Torbay's, 28lbs. kegs.
Pitch, Stockholm.
Rulers, Rolling Parallel
Screws, brass and iron.
Steel spring, $1\frac{1}{2} \times \frac{3}{8}$ "
Winches, crab.

Wheels, cast iron, for trucks and wheel barrows.

A complete list of articles, with prices and other particulars, may be obtained on application to the General Storekeeper, Madras Railway, Rayapuram, and the articles may be inspected by intending purchasers within office hours.

MADRAS RAILWAY,
AGENT AND MANAGER'S OFFICE,
RAYAPURAM TERMINUS,
MADRAS, 19th May, 1897.

H. C. WEST,
Ag. Agent and Manager.

Planters' Library.

The Wynaad and the Planting Industry of South India.
By "Francis Ford," Re. 1.

Apply to Messrs. J. B. Ferguson & Co., Colombo, Ceylon,
for the following books:—

	Rs.	A.	P.
Book-keeping for Planters	...	1	12 0
Coffee: Ceylon Coffee, Soils and Manures, Hughes	...	3	8 0
" Brazil as a Coffee Country	...	1	8 0
" Grub, Haldane	...	1	8 0
" Cultivation in Ceylon	...	0	4 0
" Planters' Manual, Brown	...	3	12 0
" and its Enemies, Nictner revised by Green	...	1	4 0
Cinchona Planters' Manual, Owen	...	4	0 0
" Cultivation, T. Christie	...	1	4 0
Cocoa, Cultivation in Ceylon	...	0	6 0
" Planting in Ceylon	...	0	8 0
Cardamoms, by T. C. Owen	...	1	0 0
Cotton in Ceylon, Hon. W. Mitchell	...	0	8 0
Chemical Analyses, Ceylon Manual, Cochrane	...	3	8 0
Ceylon in the fifties and eighties	...	1	8 0
Estate Buildings (Ceylon P. A. Prize Essay), illustrated	...	5	0 0
Gardening in Ceylon, W. Cameron	...	1	8 0
India Rubber and Gutta Percha, All about	...	2	2 0
Planters' Note Book or Molesworth	...	3	8 0
Palmyra Palm	...	2	0 0
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Ramie, all about Aloes and Ramie	...	1	5 0
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Tobacco, all about	...	3	8 0
Tea Industry in Ceylon in 1886	...	0	12 0
" Cult. and Manuf. by Hay	...	0	4 0
" Cult. in Ceylon	...	0	6 0
" at High Elevations in Ceylon	...	0	3 0

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Coffee and Chicory	...	1	12 0
" in South India, Arnold	...	7	8 0
" in Mysore, Elliot	...	7	8 0
" by Locke	...	12	8 0
" by Laborie, Planters' Manual	...	2	0 0
Cocoa, by Bidie	...	0	8 0
" by Hart, illustrated	...	4	12 0
Crops, How Crops Grow, Johnson	...	10	0 0
" How Crops feed, "	...	10	0 0
Elements of Agriculture, Fream	...	3	8 0
Forage Plants, and their economical conservation	...	0	12 0
Liming, importance of	...	0	4 0
Pruning, Desbars' Tree	...	1	8 0
Manures, Harris' Talles on	...	6	12 0
" Lawes' Compensation of unexhausted	...	1	0 0
" Munro's Soils and	...	2	3 0
Tobacco, by Locke	...	7	8 0
Tea, by Bamber	...	4	0 0
" Young T. Planters' Companion	...	4	8 0
" Nilgiri Tea Planter, McPherson	...	1	0 0
" Planting in India	...	0	12 0

MARKET SUPPLEMENT.

SATURDAY, JUNE 12, 1897.

COFFEE.

R. J. Rouse & Co.'s Weekly Coffee Report (May 21, 1897) says:—Large supplies have again been catalogued during the past week and the demand showing signs of falling off, the market was rather easier except for the fine grades.

Nearly 9,000 bags East India were offered, mostly in smaller lots and nearly all sold; good colory qualities were well maintained but the common descriptions sold slowly at rather easier rates.

Central American continues to be offered in large quantities, but values, except for desirable kinds, mark a decline of 1/- to 2/-

Futures have been rather easier owing to the continuance of large receipts at the Brazilian ports and quotations have declined 6d. to 9d. since our last.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending May 12th, 1897, says:—Bank rate $2\frac{1}{2}\%$. Bombay Exchange closes at 1s $2\frac{1}{2}\frac{1}{2}$ d. Brazil Exchange $7\frac{1}{2}\frac{1}{2}$ d. Rupee paper $3\frac{1}{2}\%$. 62 $\frac{1}{2}$. Silver 27 $\frac{3}{4}$ d per oz.

We have no change to report in this market, which remains very firm for the finer qualities, and steady for the ordinary and medium kinds. Brazil markets are lower, good average Santos being quoted at 39s cost and freight.

Daily receipts have averaged 5,286 bags in Rio, and 6,714 bags in Santos.

According to Messrs. Duuring and Zoon the European stocks on the 1st inst. shewed an increase of 6,400 tons, and the visible supply of 5,560 tons, the figures being 140,600 tons and 256,290 tons respectively, against 134,200 tons and 250,730 tons on the 1st April.

The Dutch sale, which was held on the 11th inst., comprised 19,582 bags 222 cases, and went off very irregularly, good ordinary Java selling at 46 $\frac{1}{2}$ cents, against 46 $\frac{1}{2}$ cents in the April sale.

Futures have been quiet, and close with a dull tone at a decline for the week of 9d to 1s, viz.:—Good average Santos in Havre, May delivery closes at fcs. 48.75, in Hamburg pf. 39 $\frac{1}{2}$, and No. 7 low ordinary Rio in New York \$7.45.

To-day's London official quotations are:—

	May	July	Sept.	Dec.	March
Rio	35/3	—	36/3	36/9	—
SANTOS	38/9	39/3	39/9	40/3	40/6

We quote:—

Ceylon, mid. to good mid.	101/@115/	Costa Rica, mid. to fine...	82/@108/
Do. small to low mid.	88/ „ 101/	Do. ord. to low mid.	63/ „ 81/
East India, mid. to good		Jamaica, good to fine ord.	55/ „ 68/
mid... 91/ „ 103/		Do. greenish to fine	
Do. small to low mid.	82/ „ 90/	colory...	75/ „ 120/
Guatemala, mid. to fine...	79/ „ 102/	African	32/ „ 34/
Do. good ord. to low		Columbian, ordinary	58/ „ 63/
mid... 67/ „ 78/		Do. good ord. to	
Salvador, good ord. foxy		low mid...	65/ „ 80/
greenish... 64/ „ 65/		Do. mid. to fine...	81/ „ 98/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
Rio	3,208,000	2,100,000	2,416,000
SANTOS	4,811,000	2,818,000	3,796,000
	8,019,000	4,918,000	6,212,000

Auctions:—

24 casks and tierces 11 barrels and bags Plantation

Ceylon	...	@	90/	@	113/
696 bags Mysore	...	...	85/6	...	106/6
323 bags Coorg	...	...	85/6	...	107/
304 bags Wynaad	...	...	72/6	...	98/6
2,100 bags East India	...	...	77/	...	102/6
37 bags Travancore	...	...	81/6	...	102/6
346 bags Naidoobatum	...	...	73/6	...	101/
324 bags Pulneys, part sold	...	...	75/6	...	90/6
70 bags Peermade	...	...	...	...	...

309 barrels 98 bags Jamaica, chiefly sold	...	@	53/	@	86/
12,898 bags Costa Rica, chiefly sold	...	...	59/	...	105/6
3,995 bags Guatemala	...	...	61/6	...	95/6
1,850 bags Salvador	...	...	60/6	...	72/6
1,775 bags Nicaragua, part sold	...	...	60/6	...	111/6
509 bags Vera Paz, chiefly sold	...	...	80/	...	119/
105 bags Mexican	...	...	67/	...	86/6
1,950 bags Columbian, part sold	...	...	53/6	...	87/
284 bags Guayaquil, small part sold	...	...	55/	...	—
50 bags Cape de Verde bought in.	...	...	...	...	...
568 half-bales Mocha bought in.	...	...	...	...	...
34 bags Manta	...	...	63/	...	63/6
23 bags Liberian Ceylon	...	...	40/6	...	54/
79 bags Liberian Johore, part sold	...	...	47/	...	—
10 bags Liberian Borneo	...	...	46/	...	—

On Quay Terms:—

50 bags Santos	...	...	49/	...	—
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Landed last week 1,046 tons. Deliveries 1,015 tons. Stock 13,794 tons.

Do. last year 1,146 „ „ 1,173 „ „ 12,442 „

During the week ending Friday, 21st May 1897, the public sales went off very irregularly. Ceylon Plantations gave way owing to absence of competition, but there was a continued good demand for fine colory East India at very full prices. A large proportion of the supplies, however, consisted of cherry-dried and ends of crops in small lots, which chiefly sold at a decline of 1s. to 2s. per cwt.

Imports, Deliveries and Stock of Coffee in London were as follows:—

		STOCK.		IMPORTS.	
		1897.	1896.	1897.	1896.
West India	tons.	454	530	557	924
Ceylon	„	84	147	154	268
East India	„	2757	3367	3771	5671
Mocha	„	539	521	384	471
Brazil	„	2878	1617	1039	680
Other Foreign	„	7420	5853	12482	10218
Total tons...		14132	12035	18387	18232

		HOME CONSUMPTION.		EXPORT.	
		1897.	1896.	1897.	1896.
West India	tons	157	266	300	562
Ceylon	„	69	196	127	243
East India	„	833	1188	967	2319
Mocha	„	211	224	92	87
Brazil	„	552	526	845	1042
Other Foreign	„	3861	3465	4291	4208
Total tons...		5683	5865	6622	8461

The preceding figures exhibit—

In the Imports an increase this year of	155 tons
Home Consumption a decrease of	182 „
Export a decrease of	1839 „
Stock an increase of	2097 „

Auctions went off as under:—

CEYLON.—Plantation.—9 casks 4 tierces 9 barrels 1 bag sold, smalls 91s. to 95s., low middling dull 101s., good middling colory 106s. to 107s., fine and bold 112s. to 113s., pea-berry 100s. to 104s.

CEYLON.—Liberian.—14 bags bought in.

EAST INDIA.—23 casks 6,014 bags mostly sold as follows: Mysore, smalls 83s. 6d. to 95s. 6d., low middling gray 90s. to 91s., middling 93s. 6d. to 96s. 6d., good middling 99s. to 102s. 6d., bold 103s. 6d. to 110s., pea-berry 97s. 6d. to 114s. Naidoobatum, smalls 68s. to 87s. 6d., low middling 86s. 6d. to 92s., good middling 96s. to 101s., good 103s. 6d., bold 103s. 6d. to 109s., pea-berry 92s. to 108s. Coorg, smalls 77s. 6d. to 80s., faded gray medium 83s. 6d. to 85s. 6d., low middling to middling 91s. to 93s. 6d., dull bold 98s., pea-berry 93s. 6d. to 102s. Neilgherry, smalls 76s. to 85s., low middling dull 87s. to 90s. 6d., middling 91s. 6d. to 96s., good middling to good colory 97s. to 101s., dull to fine bold 97s. 6d. to 106s. 6d., pea-berry 98s. to 107s. Wynaad,

SUPPLEMENT TO PLANTING OPINION.

smalls 70s. to 89s., faded medium 82s. 6d. to 86s., low middling dull greenish 85s. 6d. to 87s., middling 89s. to 93s. 6d., good middling and bold 95s. 6d. to 98s. 6d., good to fine bold 99s. to 104s. 6d., pea-berry 85s. 6d. to 109s. Travancore bold 98s. 6d. Nelliampathy middling 90s. to 94s., pea-berry 104s. Shevaroy, smalls 72s. 6d. to 92s., low middling 88s. to 91s. 6d., middling 94s. to 96s. 6d., bold 96s. to 108s., pea-berry 98s. to 112s. 6d. Peermade pea-berry 98s. Salem pea-berry 103s. 6d. Pulneys middling 93s. 6d., pea-berry 96s. Ceylon cleaned smalls 88s. to 90s., middling 92s. 6d. to 94s. 6d., bold 102s.

Tea.—Home advices of 21st May state:—

CHINA.—Trading in Congous is still restricted, black and red leafs being in very moderate request and at the auctions not much demand prevailed, prices realised showing, however, little change. Green teas were freely catalogued and sold somewhat irregularly, although no material alteration in values can be noted.

INDIAN.—Public auctions have been on about a par with the preceding week, viz.: 15,200 packages against 15,600 packages, while in 1896 only 3,400 packages were offered.

The chief feature of interest is the arrival of a small shipment of new season's from the Doom Dooma Tea Co.'s Hansura Estate, consisting of 44 half-chests of Orange Pekoe which realised 1s. 2d., and 21 half-chests of Pekoe 11d. per lb., quality being rather above the average of first arrivals from Assam.

Old season's were in fair demand, and previous rates fully maintained, except for low common descriptions.

Shipments from 1st April to 18th May to the United Kingdom were 1,095,000 lbs. versus 774,000 lbs. for the corresponding period of 1896.

Mail advices report that the weather had been more propitious for manufacture in nearly all the districts, particularly in the Dooars, where good rain had fallen.

CEYLON.—Catalogues included 26,400 packages, contrasted with 24,700 packages on the 11th May and 22,800 packages a year ago.

There was a good all-round enquiry and brisk competition for most kinds. Broken Pekoes however continued to sell irregularly, but Pekoe Souchongs and Pekoes were wanted both by home and export buyers, and were occasionally dearer. The selection of fine was again limited, among the highest quotations for broken orange Pekoes being the following:—Holmwood and Talawakellie 1s. 4d., Tillicoultry 1s. 3d., Hauteville 1s. 2½d. Campion and Mount Vernon 1s. 2½d., and Waverley 1s. 2½d. per lb.

The average is rather under 7½d. per lb. On the 13th May it was 7½d. per lb., and 8d. per lb. at this date in 1896.

JAVA.—Rather under 800 packages of direct import, representing the produce of five gardens, were brought to the hammer, and the greater portion was disposed of without much alteration in value.

Deliveries.—The clearances of all Tea (on which duty has been paid) from the London Warehouses, as per official returns were:—

From 1st to 18th May, 1897.....11,554,540 lbs.
 " " 1896..... 9,998,437 "

During the week the following have been printed for sale by public auction:—

	Sold.	Withdrawn.	Total offered.
	Pkgs.	Pkgs.	Pkgs.
India.....	12,240	2,983	15,223
Ceylon	24,623	1,750	26,373
Java.....	548	247	795
Total.....	37,411	4,980	42,391

Also 899 packages from second hands.

Cinchona.—London advices, dated 11th May, state:—

At the auctions on the 11th instant 1,977 packages were offered and experienced a good demand, but owing to the advanced views of some holders nothing like a clearance was effected. Values occasionally were rather dearer, but on the whole no alteration can be reported in the unit, which remains ¾d. per lb.

300 bales, &c., South American catalogued, but only 5 bales soft Colombian sold at ¾d. per lb.

Of 95 bales Ceylon Cinchona offered 32 bales sold:—Officinalis, chips and shavings renewed 2½d.; Hybrid, chips 2½d. per lb.

711 packages East India Cinchona brought forward and 200 packages sold:—Officinalis, chips and shavings 2d. to 2½d., ditto renewed 2½d. to 3½d.; Red, chips and shavings 1½d.; Succirubra, quill 2d. to 4½d.; Ledgeriana, chips 2½d. to 5½d. per lb.

309 bales, &c., Java Cinchona offered and 290 bales, &c., found buyers as follows:—Ledgeriana, chips 2½d. to 4½d., branch 4½d.; Hybrid, chips 6d., branch 4½d. per lb.

Of 557 bales African Cinchona catalogued 490 bales sold at 2½d. to 3½d. per lb. for Succirubra quill and quillings.

SULPHATE OF QUININE has met a good demand this week, and upwards of 80,000 ozs. B & S or HB in second hands have sold, 8½d. to 8½d. per oz. for old landed lots and at 8½d. to 9d. for newly landed. Manufacturers do not quote.

OFFICIAL QUOTATIONS.

Sulphate of Quinine—	in tins.	in 1 oz. vials.
Howards & Sons ... Os.	9d. to Os. 10d.	Os. 11d. to 1s. 0d.
Thomas Whiffen ... Os.	9d. „ Os. 0d.	Os. 11d. „ Os. 0d.
Brunswick..... Os.	8½d. „ Os. 0d.	
Mannheim..... Os.	8½d. „ Os. 0d.	
Auerbach..... Os.	8½d. „ Os. 0d.	
Zimmer Jobst..... Os.	9d. „ Os. 0d.	
Milan..... Os.	0d. „ Os. 0d.	
Taillandier..... Os.	8d. „ Os. 0d.	Os. 0d. „ Os. 0d.
Pelletier's..... Os.	0d. „ Os. 0d.	1s. 4½d. „ Os. 0d.

PLANTING OPINION.

A FORTNIGHTLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, JUNE 26, 1897.

[No. 13.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; and Quarterly, Five Rupees, including postage.

ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 2nd July 1897.

South Travancore. TRIVANDRUM, 17th June.—*Weather.*—Rainfall for year 32.80 inches. Rainfall for month 16.14 inches. *Crops.*—Tea flushing well. Trees looking very healthy. *Plant-diseases.*—*Heleopeltis* showing in places. *General Health.*—Health of coolies good. This has been a very healthy year, with little fever. *Labour.*—Labour quite sufficient for requirements.

Nellampathy. 23rd June.—*Weather.*—Rain for fortnight here 22.77 inches, but for the whole district I think the average will be about 35 inches. One place in Cochin Nellampathy got 35 inches last week. Total for year 36.77. *Plant-diseases.*—Leaf disease is showing in a number of places, and in one or two clearings of last year's planting it is in evidence already. Ringer has also been at work among the young plants in some clearings. *General Health.*—Fair. Coolies seem all right now, but a good few Europeans have fever. *Labour.*—Coming up rapidly. On most places three quarters of the labour is in, and the rest may be expected any time now. Moplahs are beginning to come up also. *Interesting Items.*—Jubilee celebrations were quiet, most men contenting themselves with dining together at a neighbour's bungalow. There was an enforced holiday as it was pouring rain all day. Hope they were better off at home.

Coorg. POLLI BETTA, 22nd June.—*Weather.*—Rain very heavy during last week amounting to 9.10 inches. About one inch the previous week. A regular deluge on the 19th amounting to 5.6 inches in the 24 hours. Lighter weather set in on 20th, rainfall about 1 inch, and 35 cents the following day. Hardly anything to-day. Weather favourable for planting which has been commenced. *Crops.*—Swelling nicely, and prospects a trifle more hopeful looking. Plenty of wood for next season. *Plant-diseases.*—Leaf disease beginning to show up in nurseries. Removing and burning borer in progress. Proportion of trees lost comparatively small. *Labour.*—Canarese beginning to put in an appearance. Estates fairly well off. Work pushed on with the aid of contractors. *Public Health.*—Fever and bowel complaints prevalent, but not to a serious extent. *Interesting Item.*—Proposed jubilee dinner at Club.

Kadur. MUDIGIRI, 21st June.—*Weather.*—Up to date monsoon not at all too heavy. Natives complaining of want of rain for their paddy work. Very heavy showers occasionally, otherwise a light monsoon and good planting weather. *Crops.*—A lot of our second blossom

has not swollen, and of course can come to nothing. This means a still further reduction of estimates and in consequence a reduction of expenditure. *Plant-diseases.*—Thank goodness we are free of these for the time being, but it won't be long, suppose, before we hear a lot about black rot. *General Health.*—Not at all good, every one being ill with fever, colds, &c. amongst coolies of course I mean. *Labour.*—Ample for requirements. Ghant maistries are up to time this year on account of high price and scarcity of grain in the low country. Moplah contractors are going about the country begging for work which nobody seems inclined to give out just now. *Interesting Items.*—Darbars are to be held at Chickmagalur and Mudigiri to-morrow, and those that cannot manage to get away to attend these will do honour in their own way.

North Mysore.

YEDAHALLI.—A rather belated correspondent writes on 16th June: We had a rum season here. 75 cents in mid April, which brought out a very partial blossom. All set on the 24th, 26th and 28th May. Another 75 cents, which brought out (on 2nd, 3rd and 4th June) a very good blossom. Of course it is too early to say whether that is going to set or not, but I "have me doubts." The monsoon set in "pucka" on 10th, and since it has been normal. The weather reports I've been sending you represent weather at Yedahalli, our post town, and headquarters of Sudu Taluq, six miles away. There they had splendid blossom show this year. Three of the Kola seed you kindly sent germinated and are growing nicely. The other three went bad. The Papaya seed came up well, and I'm going to put out the plants at once.

S. E. Wynaad.

PUNDALORE, 23rd June.—*Weather.*—Since my last report we are having continual pouring; during nights heaviest showers are falling which makes one to tremble of the buildings. When it was hot we wanted rains, and now we want the sun to shine a little to warm us, but it is hard to expect what we want from Nature. *General Health.*—Good. *Labour.*—Sufficient. *Interesting Items.*—In Wynaad many Companies were to open they should try to open a rice factory. About 30 years ago in Yanamand, Cocanada, I have seen the French people having rice factories, in which they baled cotton and tobacco, prepare rice, castor oil, gingelly oil, &c. and despatched to France and other countries; they moderately advanced the ryots whenever they want money on the standing crops and bought up the productions and were doing very well in those days; now I do not know how they are doing. Wynaad all the above grow luxuriantly, and so if any factory were to be opened, I think the Company will prosper and the ryots will be much induced to cultivate and sell the produce to the Company; from a rice factory by degrees coffee curing, baling and packing cinchona, etc., may be undertaken, as it will be convenient for planters if such steps are taken. The ryots whenever in need of money for rents, marriages and deaths, etc., run to a rich native and hypothecate their standing crops at Rs.45 per gulla of coffee and Rs.2 per pulla of paddy. During the harvest the money-lender comes and takes and sells at Rs.100 per pulla the coffee and paddy at Rs.4-4 per pulla. See and reckon the profit that the money-lender makes. Wynaad. When such is the case, why not open a factory? The French people were very charitable and loved their work-people very much (as the English) and were paying them regularly, and if any of their work-people get sick they sacrificed their leisure hours as an angel in the side of the bed, spent money and tried to bring up the patient, also taking very much care of the work-people's children.

Nilgiris.

PYKARA.—Finest planting south-west monsoon we have had for many a year although very wet the rain was not heavy and no wash speak of.

COONOR, 24th June.—The rain up to date has been a good deal more than usual, but since the evening of the 22nd "Queen's Weather" has set in. Talking of the "Queen, God Bless Her," the celebration was generally flat in the extreme. Coffee doing fairly. Tea still flushing well. Health good. Labour sufficient, also defaulting maistries.

SHOLUR, 18th June.—Rainfall 17.02 inches to date. Maximum and minimum temperature 90° and 60° respectively. Labour plentiful, tea flushing splendidly. Cholera in some of the Sholar villages affecting local labour only. The real monsoon burst on 15th inst., and though rain has been fairly heavy, the wind has been very moderate, and caused very little check to tea. Rates of grain rising, in sympathy with Ootacamund shandy. No local news at all.

NELLAKOTA, 21st June.—Our "dog days" have bid us farewell and the S. W. is now here. The change of temperature is simply delightful. A planter's life at present is about as enjoyable as they make them. *Crops*.—Berries swelling; rather a scarcity of those this year. *Plant-diseases*.—Borer noticeable, otherwise trees looking fit. *General Health*.—Fever prevalent. *Labour*.—Insufficient for requirements. *Grain*.—Ragi 18-20 seers per rupee, ordinary rice 9. It is interesting to see how the Coimbatore Tamil has adapted himself to circumstances. His race is essentially a rice-consuming one. In this district they have adopted ragi and thrive on it.

GENERAL NOTES AND ARTICLES.

OURSELVES.

IN view of a steadily increasing circulation and of the greater strength and influence that we hope to acquire from co-operation with the U. P. A. S. I., we have decided to convert *Planting Opinion* into a "weekly." Subscribers will, we trust, appreciate this change. They will not have occasion in future to calculate whether their paper will reach them on a particular date or only the following week. They will know exactly when to expect it, week by week; and if the management succeeds in its efforts to make the paper a comprehensive record of fluctuations of markets, and facts of interest, as well as a medium for the expression of planters' opinions on subjects connected with the planting industry, this paper should gain additional popularity. It may even hope to influence opinion in a small way, and the aim always in view will be to make it a veritable "planter's organ," having the best interests of the planting community at heart, and working hard to advance them. At the same time, this venture was started in no spirit of philanthropy, nor is it to be carried on otherwise than as a business concern. The proprietors are not grasping or greedy, but they invite planters to assist them with subscriptions, advertisements and information, so that the paper may be firmly established on a sound foundation as regards both finances and utility. It is not intended for the present to raise the rate of subscription, though the cost of postage will be doubled, and this extra charge will fall upon the proprietors. Though not invited to bear or to share this burden directly, however, all well-wishers of the paper are asked

to help indirectly, whether by subscribing and advertising or by lending a hand in the work of making it both useful and interesting, to planters. The smallest literary contributions will be thankfully received, the largest will not strike awe into the hearts of a staff enlarged by the admission of men accustomed to the demands of the *daily press*. *Planting Opinion* is but an infant as yet; but its growth has been so healthy, and its innocuous teeth have been "cut" so happily, that its parents and guardians have hopes of seeing it arrive at manhood, and in a position to look back to good work already done, as well as forward to the still nobler work of a more powerful frame and a more matured intelligence. Growing side by side, the U. P. A. S. I. and this little paper may be fellow-students, good friends and trusty allies; and even as the mouse has helped the lion in days gone by, so at some future time *Planting Opinion* may find opportunity to prove its usefulness, as well as its devotion, to the great cause of the advancement of the planting industry in India.

THE WAR AGAINST BLIGHTS.

WE take it that the destruction of blights, both animal or vegetable, that prey on his products, is perhaps the most important matter that can possibly engage the attention of the agriculturist. It is a war, the necessity for which has only been generally recognised in the present century, while the perfecting of old weapons and the forging of new ones has in the last decade proceeded with greater assiduity than ever before. And not only by trained scientists, whose lives and energies are devoted to this sole object, has the conflict against our myriads of tiny foes been waged. For practical farmers and horticulturists are working hand in hand with their leaders, putting to the touchstone of experience the theories formulated in the laboratory and experimental gardens. Many and great have been the victories thus won, yet still more numerous, alas, have been the disastrous failures, the crushing defeats. Great is still the work to be accomplished, and nowhere greater than in this land of Ind. Ryots and planters alike suffer from cruel scourges on their crops. For want of scientific guidance, of expert assistance in laying their plans of campaign, their struggles against their dreaded foes are rendered almost nugatory. The ryot, perhaps, is too conservative to quickly change his ways; all the more need therefore that he should be helped by all possible means. The planter is perhaps willing, but what can he do, what weapons is he to use in the fight?

There are happily signs of a slight change impending in the *non possumus* policy of Government towards the most important industry of the realm. We hear rumours of the establishment of a select band of scientific experts, whose

services will be exclusively engaged in the assistance of agriculture and its allied industries. None too soon, yet most welcome, are these signs. Here in Madras, great hopes are entertained of the assistance of the local Government in obtaining the services of a renowned German entomologist for the purpose of extirpating one of the lesser but still very serious plantation pests. May these hopes be realised to the full, and in the near future. It will be a beginning, and, we trust, a most encouraging one.

Unhappily, much has still to be done by the planter himself before he can hope to use with success the weapons given him. The most astonishing ignorance prevails as to the habits and lives of even the most common and widespread of our pests. Theories are advanced with the greatest disregard of the records of previous investigations, and often with openly expressed contempt of the methods used by science to establish rudimentary truth. The fault lies in the profound ignorance above alluded to, often united to a still deeper-seated indifference. Ignorance can be replaced gradually by knowledge, if only there is the will to learn. But indifference is a more serious evil, and to combat this feeling is no easy task. The agricultural *vis inertia* is a stupendous fact, and energy and perseverance of a rare order are indispensable to counteract this dead weight, obstructive to all progress and reform. In times of prosperity, there is thought to be no need of troubling to render perfection more perfect. In days of trouble, whence are the funds to come from? Such is the easy logic of the obstructionists. No care beyond to-day, no thought for the morrow: these are the sentiments shared alike by our objectionable species of planter, and the most backward of the human race.

On the other hand, they can be led, if they cannot be driven. It is to their leaders, therefore, that we would now urge to do all in their power to stimulate yet further that spirit of investigation and research, now happily asserting its bright presence in their ranks. The work often seems hopeless, to lead nowhere, to result in nothing beyond loss of time and energy. The rewards are very few, and are, nominally, insignificant. No great fortune will be theirs, no loud-sounding applause in the market-place, or its planting equivalent, the Club; even if they do achieve a sudden success. They must work for the work's sake, and in their work find their reward. And at least they will achieve the esteem and admiration of those kindred spirits who alone can appreciate their success. Let them not, too, be afraid of publishing their failures, as well as their successes. Others, eagerly working in perhaps the same direction, will welcome gratefully the warnings of those who have gone before. It requires rare self-abnegation to do this, a feeling of altruism not often met with. Yet working hand in hand, helping and encouraging each

other at every halting step or stumble, what may not an enthusiastic, brave-hearted band accomplish, what obstacles can they not overcome?

India rubber seed.

We have received many enquiries for this seed, with directions for planting, cultivation, &c. The tropical seed-firms are few and generally most unsatisfactory. We should advise our correspondents applying direct to the Director, Royal Kew Gardens, London, for information and supplies. Nearer are the Royal Botanical Gardens at Kandy, Ceylon, where experimental products are to be had in greater number and of better quality than anywhere else in the East.

Butter for planters.

If we ran out this heading to its full extent, it would be a paraphrase of the motto of this paper: *i.e.* Butter for planters made by planters. This is the preface. Now for the puff, for we are always glad to do what we can to help on planters in their little enterprise, especially if they are thoughtful enough to send specimens of their wares. Then of course we can speak with some nominal authority when addressed by enquirers, as we are pleased to be able to do with regard to the Oakland Dairy butter, (Yellahunka, Bangalore,) some pound samples of which were sent to our office. They reached us in excellent condition by post, and were a good deal superior to local butter at the price, *i.e.* one rupee per pound. Certainly far better than tinned European butter. We congratulate the Managing Proprietor of the Dairy, a planter be it noted, on the success he has attained, and hope he will get orders large and many from the readers of this paper.

Ceylon labour requirements.

Our readers will peruse the following with satisfaction. We trust Colombo will be soon proclaimed as a free emigration port:—

"A Ceylon Planter has kindly given us," says a Ceylon exchange, "a perusal of a letter he lately received from Calcutta, in which a coolie recruiting agent mentions a point of considerable importance to those who are contemplating securing a labour supply from India. In the course of that letter the coolie recruiter mentions that he called on the Emigration Agent at Calcutta and learned from him that 'Ceylon is not included as an emigration port, and therefore before sending coolies there, special sanction would have to be obtained from the Government of India, unless you ship the coolies as free emigrants and then the difficulty would be on arrival at Colombo, should they strike, you would not have the slightest hold on them, and I would have to pay their passages back to where they came from, which is hardly good enough. I am perfectly aware that the Ceylon Planters at present are handicapped for a good working jaf of coolies to be independent of the Madras labour supply. I am in a position to supply hundreds of a good agricultural class of coolies who I would not have the slightest difficulty in persuading to go, and I am certain they would give satisfaction on arrival there; but until the Ceylon Planters move the Government to proclaim Ceylon a free emigration port, I am perfectly helpless.'"

What is manurial value?

A big question this, to which many columns of our space might be profitably devoted. Yet the outlines are so simple that every planter should have a thorough grasp of it. These remarks are suggested by a query from a reader whether a certain peculiar soil he found on his estate was of any value as a manure. And yet the analysis he enclosed answered the query very decisively. What

should a planter look for in a manure for coffee or tea? Simply for nitrogen, phosphoric acid, potash and lime. The analysis sent showed only traces of ammonia (a combined form of nitrogen) and but 1 per cent. of magnesia and alkalis soluble in nitro-hydrochloric acid. Very obviously this soil is no good as a manure, *i.e.* for supplying food to the plant, for the simple reason that it is worse than even the most indifferent coffee soils, at all events as regards the *soluble* constituents. The analysis, by the way, only showed the soluble constituents: it would have been more interesting and valuable had it shown both the soluble and insoluble constituents. To use a soil profitably as manure, it should contain a large proportion of any of the above elements already mentioned. Generally speaking, jungle top-soil and swamp-soil are the only ones that can be so utilised.

Canaigre: A new product.

Fond as we are of drawing the earnest attention of our readers to the possible value of new planting products, yet it is with the weary conviction that scarce a quarter per cent. of our readers will ever take the matter up. The expense perhaps is not slight, and the trouble decidedly great. How easy and sure would not an experimental garden make things!

What has become of the canaigre, the plant which was introduced into Victoria a few years ago from Mexico, and which at the time was thought by many would become in a short while one of our most valuable products. The value of this root to the tanner is beyond all question; the numerous analyses made both in Europe and America have proved this, and we are now informed by the *Gardeners' Chronicle* that the result of the various investigations has been to create a great demand for it in the tanning trades of Europe, and more recently in the leather-making centres of the United States. The only supply now to be obtained is from the wild plants growing along the rivers and valleys of Western Texas, New Mexico, and Mexico.

Canaigre is the vernacular name in Mexico for the *Rumex hymenosepalum*, one of the family of docks. In Mueller's "Industrial Plants" its value is spoken of. But it was not until Mr. A. Johnson of Footscray imported at considerable trouble some half dozen years ago, a quantity of the roots from Mexico that much was heard or known of this valuable tanning plant. Some acres of land at Mornington were planted with the product of the imported roots, but either the soil was too poor or the situation too cold, the plants did not flourish as expected. In Gippsland and some other localities the canaigre is now being tried, and in a few of these the growth of the plants has been satisfactory.

There appears to be but little doubt that this valuable root will, in favourable situations, pay well to grow. Careful estimates show that an acre of these plants, properly cultivated, will yield from 20 to 30 tons of green roots, equal to 7 to 10 tons of the dried material ready for shipment. At the lowest estimate of both yield and price, an acre of canaigre would bring £35, but probably £45 would be a safe and reasonable estimate of the value per acre.

The old roots, as hard as wood and almost black, are especially rich in tannic acid. The stalks, stems, and leaves also contain tannin in sufficient quantity to pay for harvesting. Age adds to the roots an excellent colouring matter. The one-year-old roots yield from 20 to 25 per cent., the older roots 25 to 40. From 6 centners, or 112 lb., of fresh, 2 centners of dry, or 1 centner of extract, is obtained. By taking the extract from roots and leaves where the plant grows, much money might be saved, and losses due to transport saved. The refuse could be used to burn, or as cattle fodder, for which purpose it equals straw.

In extracting the tannin it is best to cut up the roots, and to use a diffusion method similar to that used in extracting sugar from beet or cane. It is necessary to use copper kettles, as the canaigre influences and is influenced by iron. It is well also, when extracting by means of lye, and when steaming, to use vacuum pans, otherwise the tannic acid runs the risk of becoming gallic acid. By steaming

under small pressure there is no loss of tannin, and an excellent extract of a bright colour, easily soluble in water, is obtained. Some of the advantages of canaigre over other materials are that it gives to leather a full, smooth, and good grain, and a soft bright colour. It is specially suited to uppers, saddles, and fancy leathers. It is said to have been used by the Jesuits in lower California, some 200 years ago, but as it was thought to contain too much tannin, and its proportions were scarcely understood, it did not become generally used.

Plants may be propagated from seed or from division of the roots. The plant is of rapid growth; in the space of about four months it starts into growth, matures, and is ready for harvesting. It does best in a rich sandy loam; a moderately moist soil suits it best. The tubers resemble sweet potatoes, there being from three to a dozen to each plant, varying from 2 oz. to 18 oz. in weight. The leaves are a wholesome substitute for spinach, and both leaves and roots are used by Indians and Mexicans as medicine. In the warmer districts of Victoria, and especially where water could be applied in dry seasons, the canaigre should pay well to cultivate.

COMMERCIAL NOTES.

YET another Tea Company, but not connected with Southern India. The Baraora (Sylhet) Tea Company, Limited, has been formed primarily to take over the estates and properties of the Baraora Tea Company (Limited) and the Rasetpur Tea Company (Limited) in South Sylhet, in the province of Assam, and also to acquire at a later period the Daragaon Estate adjoining the gardens of the Rasetpur Company. The estates to be immediately taken over comprise the Baraora and Rasetpur gardens, the former containing 1,350 acres planted with tea and 1,150 acres of reserve and waste land, while the latter contains 1,033 acres of tea and 1,777 acres of reserve land. The capital is £200,000, in shares of £10 each, of which 2,566 preference and 2,567 ordinary shares will be taken by the vendors in lieu of cash in part satisfaction of the purchase price of the Baraora and Rasetpur Companies' estates.

Now that tenders with respect to the use of the Periyar water-power are called for, will any planter or Tea Company try to turn that power to account, with electricity as an ally? Any experiment in this direction would be extremely interesting to the public, though it might easily be disastrous to the bold adventurer.

It would be interesting if planters in various districts would, from time to time, advise us of any change in current rates of freight, or any new "conferences" or agreements. The Freight problem is one with which the planter in Southern India has never yet fairly grappled: he is still largely at the mercy of the agent and the charterer, though probably both deal with him much more gently than a majority of planters think.

U. P. A. S. I. LEAVES.

(Gathered by the Secretary, U. P. A. S. I.)

THE shower of leaves in the last issue was plentiful because of Her Majesty's Diamond Jubilee and the loyal Address of the Association, in its silver case. This week, a leaf that might well have appeared earlier, may find a place. It tells how the Chairman of the U. P. A. S. I. has intimated to the Honorary Secretaries of District Planting Associations that arrangements have been made, whereby the Secretary of the U. P. A. S. I. will be able to gather these leaves and pile them up in the columns of *Plant-*

ing Opinion, and publish U. P. A. S. I. Circulars in this paper whenever he considers it expedient to do so. By this means he will be enabled to convey information to individual planters more rapidly than can be done through the medium of District Associations. If the experiment works well, and Honorary Secretaries of those Associations approve, he may continue to lighten their labour very considerably, for there must be busy times when the circulation of U. P. A. S. I. Circulars is anything but a labour of love to the Honorary Secretary who has to pass them round.

* * * *

No doubt, this innovation will be of use to the paper—always provided that it, and the Leaves, find favour with Planting Associations and Planters. On the other hand, as the paper makes no charge for placing a considerable amount of space at the use of the U. P. A. S. I., the Chairman rightly alludes to the arrangement as comprising “valuable concessions,” and expresses a hope that all Chairmen, Honorary Secretaries and Members of District Committees will do their utmost to induce the members of their respective Associations to accord the paper their hearty support by subscribing thereto, by advertising in its columns, and by sending in items of news and information concerning planting matters.

* * * *

There are thus three channels along which planters can send their donations of strength and support to the paper: subscriptions, advertisements, and literary contributions. All and all sorts will be welcome. If the appeal of the Chairman is heartily responded to, *Planting Opinion* will become what it has been steadily striving to make itself, viz., the recognised, respected and influential organ of the planting communities of Southern India. That there is room for such an organ—that there is even need of it—has long been evident, but no newspaper proprietor can, single-handed, supply such a want as this. He must have the co-operation and the sympathy of the public in whose behalf he works.

* * * *

The Madras Government has kindly allowed until the 25th August next for the consideration of the Report of the Planters' Enquiry Committee by planters, and the submission of a report by the U. P. A. S. I. This will allow time for the report to be properly digested, and carefully matured remarks thereon should be the outcome. No Committee meeting will be held until just before the Annual Meeting of the U. P. A. S. I., but every effort is to be made to deal with the matter thoroughly and expeditiously on that occasion.

* * * *

Statistics come in but slowly. If no changes are to be made in the old figures, Honorary Secretaries would confer a favour by informing the Secretary of the U. P. A. S. I. accordingly. It is a difficult task to collect them, of course, but if planters will only help by promptly sending the figures relating to their estates, work will progress speedily.

* * * *

Statistics or information on general subjects will be as welcome if sent in by planters who are not members of District Associations as they are when received from those

Associations. It is desired to make the statistics in the Book of Proceedings a complete and accurate record concerning all planters' estates in Southern India.

* * * *

By the way, a good many copies of the various books of Proceedings, from the “Planter's Conference” to the U. P. A. S. I. are still available. The price is Rs.1-8, or per V. P. P. about Rs.1-10-6. Considering the number of planters there are who take a real interest in the affairs of the community to which they belong, these books should be in better demand than they have been hitherto.

ABSCONDING MAISTRIES.

ABSCONDING maistries have too long been a source of loss and annoyance to planters. Registration, both compulsory and voluntary, have been proposed as remedies. Some day in the next century things may have progressed appreciably further in this direction. In the meantime we would invite those of our readers who are troubled with cases of defaulting maistries to forward us details for publication. If planters generally support this idea, a great deal will be effected in controlling the present well-nigh intolerable evil.

NOTICE.

Planters are advised not to give employment—or an advance to bring coolies—to one Narrain Maistry of the Pallar caste, son of Chendava, of Kulloomudday Village, Coimbatore District, as he is under an advance of Rs. 200 on a stamped agreement to the undersigned to work on the Southern Estate, Colacumbay, with 30 coolies from 1st June 1897 to 31st May 1898. He and his coolies came to work on the 17th June and absconded on 20th June after receiving the usual weekly rice money. The personal description of Narrain is as follows:—

Short, slim, straight nose, prominent eyes, dark speckled countenance. Wears a silver anklet on right leg, and dresses in a new scarlet soldier's jacket.

W. MULLALLY,

“Ibex Lodge,”

THE DROOG, COONOR.

THE SOUTH OF INDIA PLANTERS' ENQUIRY COMMITTEE.

THE report of the South of India Planters' Enquiry Committee has not, we think, been “laid on the Editor's Table,” but the veil of secrecy that shrouded it has been partially removed by the *Madras Mail*, which announces that the following are the recommendations made in the report with respect to the system of Advances:—

(1) That Madras Act V. of 1866 should be amended so as to provide a suitable labour law for all the planting districts in Southern India.

(2) That the question of declaring Act XIII. of 1859 to be inapplicable to contracts for labour governed by the amended Act should be reserved for consideration.

(3) That the Native States of Mysore, Travancore, and Cochin should be invited to adopt the amended law.

(4) That the execution of the amended law should be made reciprocal between the Madras Presidency and Coorg on the one hand and the Native States of Mysore, Travancore and Cochin on the other, by a convention or mutual agreement.

(5) In default of a convention—

(a) that British Magistrates should be empowered to give effect to orders of certain Magistrates in Native States in respect of fraudulent breaches of contracts under the amended law, or if there is no amendment under Act XIII. of 1859, or preferably

(b) that Magistrates in British India and in the Native States of Mysore, Travancore and Cochin should be empowered by their respective Governments to deal with persons found within their Jurisdiction who commit fraudulent breach of contract (as above explained) cross the border.

(6) That in the event of either of the above suggestions 4 or 5 (b) being accepted, the Mysore State should no longer be exceptionally treated in respect of British processes in breach of contract cases.

To supplement this information, we give our readers a copy of Act V. of 1866, which will enable them to see the exact character of the piece of legislation that has been selected as the basis of future improvements, &c. The Act is as follows:—

MADRAS

ACT No. V. of 1866.

PASSED BY THE GOVERNOR OF FORT ST. GEORGE IN COUNCIL.

Received the assent of the Governor on the 30th August 1866, and of the Governor-General on the 6th October 1866.]

An Act to regulate the manner of engaging and contracting with Native inhabitants within any of the Districts subject to the Government of Fort Saint George, for labor to be performed in any part of India beyond the territorial limits of the Presidency of Madras.

Preamble.

Whereas it is expedient to regulate the manner of engaging and contracting with Native inhabitants within any of the Districts subject to the Government of Fort Saint George, for labor to be performed in any part of India beyond the territorial limits of the Presidency of Madras; It is enacted as follows:—

Interpretation.

1. The following words and expressions in this Act shall have the meanings hereby assigned to them, unless there be something in the subject or context repugnant to such construction, that is to say:—

“Contractor.”

The word “Contractor” in this Act shall be taken to mean, as well a person who contracts for the supply of laborers to others, as a person who employs Recruiters to engage and supply laborers for the purpose of serving such person himself.

“India.”

The word “India” shall denote the territories vested in Her Majesty by the Statute 21 and 22 Vic. Cap. 106, entitled “an Act for the better government of India,” and also all Native States and Foreign Dependencies within such territories.

Contracts for labor in any part of India beyond the territorial limits of the Madras Presidency unlawful, except under this Act.

Saint George for labor to be performed in any part of India beyond the territorial limits of the Presidency of Madras; provided that nothing in this Act shall apply to any contract of any Native Seaman or other person who of his own free will shall contract to navigate or serve on board any vessel or who shall embark on board such vessel in pursuance of such contract, or to any person who shall contract to serve as a menial servant only, and who shall embark as such menial servant.

Appointment of Protectors of Laborers.

Protectors of Laborers to be deemed Public Servants.

be held to be a Public Servant within the meaning of the Indian Penal Code.

General duties of the Protector of Laborers.

4. The Protector of Laborers, in addition to any special duties assigned to him by this Act, shall, so far as is in his power, generally protect and aid, with his advice or otherwise, all laborers under contract in pursuance of this Act.

Protector of Laborers to license Contractors or Recruiters.

Duration of license and cancellation in case of misconduct.

Form of License to a Contractor, and fee to be paid.

Form of License to a Recruiter, and fee to be paid.

Recruiters to wear badge.

Natives engaging to labor not to leave their Districts without appearing before the Protector of Laborers.

Examination and registration.

Fee for registration.

Protector of Laborers a fee of one Rupee.

Laborers refusing to proceed to place of labor, not to be compelled to do so.

Proviso.

proceed to, or detain him at, any place against his will; but nothing in this Section shall be taken to diminish or affect in any way the legal liabilities, Civil or Criminal, of such laborer, incurred by him by reason, or in respect, of his refusal or neglect aforesaid. Every case in which a laborer is charged before a Magistrate of the Town of Madras with refusing or neglecting to proceed as aforesaid shall be heard and determined by such Magistrate in a summary manner; and every such laborer shall, on conviction, be punished in the manner provided in Section 492 of the Indian Penal Code for the punishment of offences under that Section.

5. The Protector of Laborers shall license so many fit persons as shall seem to him to be necessary as Contractors or Recruiters of laborers within his jurisdiction, and shall assign to each such Contractor or Recruiter a District or Districts wherein he may engage laborers; and no person shall act or be employed as a Contractor or Recruiter of laborers except under a license from the Protector of Laborers.

6. Every license shall be in force for a period of one year; but in case of misconduct on the part of any Contractor or Recruiter, the Protector of Laborers may cancel his license before the expiration of the period for which it is granted.

7. Every license to a Contractor shall be in the form set forth in the Schedule A. to this Act annexed. For every such license there shall be paid to the Protector of Laborers a fee of one hundred Rupees.

8. Every license to a Recruiter shall be in the form set forth in the Schedule B. to this Act annexed. For every such license there shall be paid to the Protector of Laborers a fee of ten Rupees.

9. Every person holding a license as a Recruiter of laborers shall wear conspicuously a badge bearing the inscription of Recruiter of Laborers in the vernacular language of the Town, District or Districts in which he is licensed to engage laborers.

10. Every Native inhabitant of India, who shall in the Town of Madras or in any District within the Presidency of Madras enter into any engagement with a contractor or Recruiter of laborers, shall, prior to leaving the Town of Madras or the District within which the engagement was entered into, appear with the Contractor or Recruiter before the Protector of Laborers of the town of Madras or of such District; and no Contractor or Recruiter shall remove such laborer from the said Town of Madras or District until he shall have so appeared. Upon so appearing, the Protector of Laborers shall examine the laborer with reference to his engagement; and if it appears that he comprehends the nature of the engagement he has entered into and that he is willing to fulfil the same, and if it appears that the Contractor or Recruiter has authority to enter into the engagement, the Protector of Laborers shall register, in a book to be kept for the purpose, in such form as the Government of Fort Saint George shall prescribe, the name, name of the father, and the age of such laborer, and the name of the village or place of which such laborer is a resident, the name of the District to which it is intended he shall proceed, and the rate of wages and period of service, if any, agreed upon between the laborer and the Contractor or Recruiter. If the Protector of Laborers shall be of opinion that the laborer does not comprehend the nature of the engagement, or has been induced to enter into the engagement by fraud or misrepresentation, or if the Protector of Laborers shall be of opinion that the laborer is in a state of health which makes him unfit to undertake the journey which he is about to commence, he shall refuse to register his name. A copy of every registration under this Section, on substantial paper which shall not require a stamp, shall be furnished by the Protector of Laborers to the laborer registered.

11. For the registration of every laborer, the Contractor or Recruiter shall pay to the Protector of Laborers a fee of one Rupee.

12. If any laborer shall without good and sufficient cause, refuse or neglect to proceed to the place at which the contract is to be performed, it shall not be lawful to compel him to proceed to, or detain him at, any place against his will; but nothing in this Section shall be taken to diminish or affect in any way the legal liabilities, Civil or Criminal, of such laborer, incurred by him by reason, or in respect, of his refusal or neglect aforesaid. Every case in which a laborer is charged before a Magistrate of the Town of Madras with refusing or neglecting to proceed as aforesaid shall be heard and determined by such Magistrate in a summary manner; and every such laborer shall, on conviction, be punished in the manner provided in Section 492 of the Indian Penal Code for the punishment of offences under that Section.

Contractors or Recruiters to establish depôts, and receive and maintain laborers therein.

13. Every Contractor or Recruiter licensed under this Act shall, if called on to do so by the Protector of Laborers by whom he is licensed, or by any Protector of Laborers within whose jurisdiction laborers recruited under the provisions of this Act may be detained previous to being conveyed to the place at which the contract is to be performed, establish a depôt in a place to be approved of by such Protector of Laborers. Every such depôt shall be kept up by the Contractor or Recruiter for the reception of laborers to be supplied or forwarded by or through him. All such laborers shall, on their arrival at or in the neighbourhood of the depôt so established by the Contractor or Recruiter by, through, or for, whom they have been engaged or forwarded, be at once taken to, and received into it, and shall be entitled to receive in such depôt, at the expense of such Contractor or Recruiter, suitable lodging, food, clothing, and medical attendance, until such laborers shall be declared by the Protector of Laborers to be no longer entitled thereto. Every such depôt as aforesaid shall be under the supervision of the Protector of Laborers, and shall be open to his inspection at all times, and shall be managed and regulated by the Contractor or Recruiter in accordance with such rules as the Protector of Laborers may, with the sanction of the Government of Fort Saint George, from time to time lay down in that behalf. Every laborer recruited under the provisions of this Act shall be conveyed with all convenient despatch to the place at which the contract for labor is to be performed.

Duty of Protector of Laborers prior to embarkation of laborers.

14. Whenever laborers hired under this Act are about to embark on board of any vessel, it shall be the duty of the Protector of Laborers who may be stationed at the port of embarkation, to satisfy himself that the vessel has sufficient accommodation for the number of laborers who are about to be embarked, and that reasonable provision has been made for their maintenance and comfort on the voyage; and thereupon he shall sign a written authority to the Master of the vessel to proceed upon such voyage, with the number of laborers specified therein. Any Contractor or Recruiter of Laborers who shall embark any laborers hired under this Act, and any Master of any vessel who shall receive any such laborers until such written authority has been obtained or in excess of such authority, or who shall afterwards receive on board such passengers or

Penalty for embarking without authority, and for receiving passengers or cargo tending to incommode the laborers on board.

cargo as shall unreasonably diminish the space necessary for the comfort or accommodation of such laborers, shall be liable to a fine not exceeding five hundred Rupees.

Fees received to be accounted for to Government.

15. All fees received by any Protector of Laborers shall be accounted for to Government in such manner as the Governor of Fort Saint George in Council may direct.

Penalty for making unlawful contract for labor.

16. Whoever shall, except under and in conformity with the provisions of this Act, make any contract with any Native inhabitant of India for labor to be performed in any place in India beyond the territorial limits of the Presidency of Madras shall be deemed to have committed the offence specified in Section 363 of the Indian Penal Code; and whoever shall aid in or abet the making of any such contract shall be deemed to have abetted the commission of that offence.

Penalty for recruiting without being licensed.

17. Whoever not being a Contractor or Recruiter licensed under this Act, shall act or be employed as a Contractor or Recruiter of laborers, or shall, contrary to the provisions of this Act, within the Town of Madras or within any District subject to the Government of Fort Saint George, enter into any contract with a Native inhabitant of India for labor to be performed in any place in India beyond the territorial limits of the Presidency of Madras, shall be liable to a fine not exceeding five hundred Rupees.

Penalty for Contractor or Recruiter failing to take the laborers he has engaged before the Protector of Laborers.

18. Whoever being a licensed Contractor or Recruiter under this Act shall remove any laborer whom he may engage in the Town of Madras or in any district or place from such town, district or place, without such laborer having appeared with the Contractor or Recruiter before the Protector of Laborers in order that such person might be examined and registered; and whoever shall, by means of intoxication, violence,

fraud, or false pretences, induce any Native inhabitant of India to enter into any contract within the Town of Madras or any District subject to the Government of Fort Saint George for labor to be performed in any place in India beyond the territorial limits of the Presidency of Madras, or to proceed to any such place without having entered into any contract, shall be liable to a fine not exceeding five hundred Rupees.

Penalty for forwarding laborers, or allowing them to go, without being duly registered.

19. Whoever being a duly licensed Contractor or Recruiter, shall forward or send any laborer from the Town of Madras or from any District in which he has entered into an engagement, without such laborer having been duly registered in accordance with Section XI. of this Act; and whoever, being a duly licensed Contractor or Recruiter, shall induce or knowingly permit any such laborer to leave the Town of Madras or any District in which he has entered into any engagement, without the laborer being duly registered as aforesaid, shall be liable to a fine not exceeding five hundred Rupees.

Prosecutions under this Act where and how to be instituted.

20. All prosecutions under this Act shall be instituted, on information laid at the instance of the Protector of Laborers before a Magistrate of Police or before a Magistrate of the District, according as they shall be instituted for offences committed within, or for offences committed beyond the limits of the Town of Madras.

Levy of fines.

All fines imposed under the authority of this Act may, in case of non-payment thereof, be levied by distress and sale of the goods and chattels of the offender by warrant of the Officer imposing the fine. When a warrant of distress is issued, the said Officer may order the offender to be detained and kept in safe custody until return can be conveniently made to such warrant, unless the offender enter into a recognizance, with or without sureties, conditioned for his appearance before such Officer on the day appointed for such return, such day not being more than eight days from the time of taking such recognizance; but if, before issuing such warrant of distress, it shall appear to the Officer imposing the fine, by the admission of the offender or otherwise, that no sufficient distress can be had within the jurisdiction of such Officer whereon to levy such fine or penalty he may, if he think fit, refrain from issuing such warrant of distress and in such case, or if such warrant shall have been issued and upon the return thereof such insufficiency as aforesaid shall be made to appear to the Officer imposing the fine, he shall, by warrant, commit the offender to jail, there to be imprisoned, with or without hard labor, for any term not exceeding two months where the amount of the fine shall not exceed fifty Rupees, and for any term not exceeding four months where the amount shall not exceed one hundred Rupees, or for any term not exceeding six months in any other case the commitment to be determinable, in each of the cases aforesaid on payment of the amount. The fine or any part thereof which remains unpaid, may be levied at any time within six years after the passing of the order imposing it; and the death of the offender does not discharge from the liability any property which would after his death be legally liable for his debts.

Commencement of Act.

21. This Act shall come into operation on the 1st day of November 1866.

SCHEDULE A.

Office of the Protector of Laborers at

A. B. is hereby licensed, under (Madras) Act V. of 1866, to be a Contractor for engaging persons in the District (or Districts) of to proceed to any part of India beyond the territorial limits of the Presidency of Madras, for the purpose of laboring for hire.

This license will be in force for one year only from this date.

Dated the day of 18

(Signed) E. F.

Protector of Laborers

SCHEDULE B.

Office of the Protector of Laborers at

O. D. is hereby licensed under (Madras) Act V. of 1866, to be a Recruiter for engaging persons in the District (or Districts) of to proceed to any part of India beyond the territorial limits of the Presidency of Madras, for the purpose of laboring for hire.

This license will be in force for one year only from this date.

Dated the day of 18

(Signed) E. F.

Protector of Laborer

LETTERS TO THE EDITOR.

ANSWERS TO CORRESPONDENTS.

[F. MEPPEN. Your idea of chess problems will be borne in mind, and, if feasible, will be carried out. "KULLAKAMBY." Sorry, we can't help you with wattle-seed. Certainly, leguminous cuttings will be of far more use than ordinary jungle. That yellow-flowering legume of which you speak is a dangerous thing to plant in coffee: it has very deep tap-roots so that you will find it almost impossible to get rid of it. Mustard should do well: allow three months growth before you allow a coolie on the ground, and dig in when it begins flowering. "YEDAHALLI." Glad to hear from you as soon as you can write your "yarns." L. MATHIAS AND MIRZA MAHDY KHAN. See para. on Rubber in "General Notes." Sorry cannot give more information at present.—Ed.]

"VEGETABLE TYPHOID."

SIR,—Looking through some T.A.'s., I came across the following signed "T Koko"—"Beware of the practice of burying prunings. No tree feeds on its own refuse, or the result would be as in animal life? (by analogy, and probably experience will prove the truth later on if men are not careful.) "Absit omen"! vegetable typhoid in tea would be a fell follower of *Hemeleia vastatrix* in Coffee."

Great Scott!! What am I to look for to find "vegetable typhoid"! I am a great believer in burying anything I can get hold of. I would like the opinion of some of our leading planters on this subject—men who have thought the subject out—because if "T Koko" is correct in his statement, all our forests must be suffering from "vegetable typhoid," for surely forest trees thrive well on their own refuse "made by decaying leaves," broken branches, etc. It seems to me a subject well worth discussing in P.O.

5th June, 1897.

Yours, etc.,
"KOLA."

[NOTE.—This "nom-de-plume" is registered, and infringements will be prosecuted. You have scored a point, O Kola, in your letter. T. Koko starts well, but comes a cropper in the open. But read his letter again, with the connected extracts and then write another criticism.—Ed.]

COST OF LIVING ON PLANTATIONS.

DEAR MR. EDITOR,—The luxurious manner in which a young planter can live on Rs.100 per mensem is most edifying and abundantly proves they are, if anything, overpaid. But there are several estates on these hills where Superintendents of several years' standing draw salaries varying from Rs.150 to 275. They are mostly married men with, say, an average family of 4. How can this income be managed to advantage? Food and clothing are of course absolute necessities, but where can the four be decently educated on this salary, and what chance has a man of providing for the future should the bread-winner lose this billet or any other disaster happen? Of course the answer is, married men should not be in such a position; but owing to the failure of coffee, the amalgamation of tea concerns and reduction of establishment, many men married when in good circumstances, are now reduced to paid Superintendents, and as capable and steady men proprietors take advantage of their circumstances and give them little more than a "living wage". By the bye, both the correspondents who live on Rs.41-10-0 and Rs.55, respectively, do not include a "dhobi" and soap in their accounts. I suppose these are able to be dispensed with when "living on the cheap."

"YAH."

MANURING TEA.

DEAR SIR,—In answer to "Pekoe," "extra quick flushes cannot fail to be inferior both in flavour or quality generally." The one ambition of an Assam planter is to get round his garden in 5 to 6 days during the season June to October; if he can't, he finds his bushes going ahead and leaf hardening. Remember

that in Assam the soil is more prolific—and a 6 days plucking would only equal 12 days to a fortnight here. I can also quote authorities as to the paying qualities of manure. There was a small patch of tea, at Tezpur, on the N. bank of the Bhramapootra, which obtained all the conservancy manure and managed to make 18 Bengal maunds an acre—with a fair average market price.

My own experience both on these hills and elsewhere is that manure not only increases yield, but puts "guts" into tea that cannot be obtained otherwise.

I certainly would not put manure into a long lanky unpruned China bush, but having cut it down, trimmed, cultivated and manured, both the yield and quality of the leaf are improved undoubtedly.

I send you, "Mr. Editor," a sample of roughly made tea (my tea house is not working, and it was made in a cutcha building, without withering or fermenting space), and if it has not both strength and flavour I'm a Dutchman—and its tappings from highly manured, deeply pruned tea.

Yours faithfully,
OLD EXPERIENCED PLANTER.

CHRISTIAN COOLIES.

SIR,—I have read with interest and some amusement the remarks of your "much disgusted planter" anent the Native Christian, and think I can say a few words on the subject. The Christian cooly and Boy of our Indian towns are not the result of Mission work, but of the very bad example too often set by the majority of European Christians to all classes of natives in this country, and are Heathen, Roman Catholic or Protestant, according to the supposed preference of the Master or Missis whose employment they seek.

"The Missions have much against them" says he. They have! and mostly in the walk and conversation of Christian Englishmen and women. It is a common thing for missionaries preaching at Hindoo festivals to be told, "Go and say all that to your English Officers and gentlemen—not to us!"—As to missionaries keeping their converts sober, the idea is too absurd for discussion. Can the Garrison Chaplain keep the officers attending his church sober, or hinder profanity among them?

Do planters (disgusted or not) and other highly educated Englishmen, reared in good Christian homes, set an example of sobriety and general morality to their native servants who have been brought up amid every disadvantage, and surrounded by the lowest Hindoos and Mussulmen?—If they did, the native Christian would be a far better man, and the missionaries' work much lightened.

The surprising honesty met with among out-and-out heathen alluded to by the disgusted planter is a psychological problem that has puzzled wiser heads than his or mine, so I will not attempt to explain it. But it is not the Native Christian alone who is dishonest. Highly educated Christian Europeans have embezzled money, &c., and gone to jail for it.

CROMLECH.

THE COOLY AND THE MISSIONARY.

SIR,—May I ask permission to reply to certain strictures passed on my last letter on this subject by a writer in the *Madras Times*. This gentleman edits a column called "Church Notes" in your contemporary. He makes capital out of the remark that I made about missionaries living in exactly the same style as any other class of Anglo-Indians. He asks if I want them to live like savages. No, I don't want them to live like savages or endure unnecessary hardships of any kind. But what I distinctly object to, and said in my letter, is that when these worthy individuals go home to collect subscriptions, a certain, and not small, proportion are in the habit of wilfully misrepresenting their position out here. They dilate on their hard-

ships, their exile, their moving adventures by flood and field, the dangers they run at the hands of fanatics, and what not. They dilate on all this, I say, as if their experiences were—those that are true—singular to the missionary and were not the common lot of all who came to the East to gain a living. Those touching missionary meetings at home, those stirring appeals to the pockets of the audience, do they not appeal powerfully indeed to the Anglo-Indian? Estimable men and upright, why should they not cadge for subscriptions to build them comfortable homes and carriages?

It is wonderful, indeed, when one reflects on their worthiness, their austere self-denial, that the cooly can learn anything but good from the missionary.

And yet, when we look into the matter more closely, we find that the missionary himself is extremely diffident about the virtues of the converted heathen. I know of many cases where Christian servants are religiously salved by missionaries. Perhaps it is, who knows? because they want to be able to add to their converts by engaging heathen domestics and turning them out as soon as they become Christians.

It must not be supposed that my remarks apply to Roman Catholic Missionaries. Oh, dear no. These are a lot of men, who so far forget their calling and dishonour the name of their Teacher, as to live not only among the heathen, but *with* them. They take all sorts of absurd vows to spend all their lives in India, never to enjoy an income over a fixed miserable pittance barely enough to keep body and soul together. Ridiculous men, these, surely. They actually attach a literal meaning to the word “minister,” and pretend that being padres or clergymen they should serve their flock and tend them in all ways, humble and otherwise. Somehow, Roman Catholic coolies can be kept fairly in hand by appeals to their padre. The other jât of cooly is under the control of no one.

A strange contrast, the lean ascetic priest and the beefy, portly Missionary! I confess to being neither a Roman Catholic nor Protestant, so my remarks should be taken as those of an unbiassed but still

ANOTHER DISGUSTED PLANTER.

SHORT CROPS.

I.

SIR,—Two small errors have crept into my letter in last issue: 18 inches of new wood *on* not *and* every field—and in the last para. referring to the use of sulphate of iron, it should read freedom from *smut* not sand.

If it would free our fish and other artificials from sand it would have a big sale!

Yours faithfully,
PERSEVERANCE.

Ooty, 19th June.

II.

SIR,—Herewith my experience of the above. So far as my estate is concerned, I put the short crop down to *untimely rain in February*. My annual rainfall is about 40 inches, and a dry December, January, February and a part of May as a rule, whereas last year my rainfall was as follow:—January 0, February 0, March 0.26, April 1.29, May 2.29, June 19.00, July 19.46, August 13.53, September 8.63, October 1.51, November 5.59, December 3.95 = 76.81, January (1897) Nil, February from 14th to 20th 1.67, and the last shower did the mischief; my trees were in splendid health and good bearing wood, little or no “leaf disease” all the year, BUT there was no chance for the trees to “winter,” and so when this February rain came, the whole place burst out into “wood instead of spike.” I certainly had no fall of leaf like your correspondent “Perseverance,” and I am now more convinced than ever that it was the “wet” year followed by too early rains that have given me a short crop,

and that, I think, is the opinion of most planters I have spoke to on the subject. Coffee, in my humble opinion, wants at least 2½ months dry weather before the blossom, and when I have had this I generally picked all the crop, and I speak from a experience of 18 years, but it would be interesting if others would give their opinion, and when you have received a certain number of letters on the subject you will, I hope, sir, sum up and give the “general” opinion formed by yourself after reading the several letters.

“KOLA.”

III.

SIR,—I was very glad to see the letter by “Perseverance” in your last issue, and consider that he has opened up a subject for discussion that every one interested in coffee ought to give his ideas on, and with this object in view I write to tell you what little I know about it and what my observations have been. To start with, can anyone suggest a reason for getting the leaf disease so late in the season as we do now? Ten years ago I can remember that we always had the worst of it during September and by the end of the month, say, hardly a leaf was on the trees. This of course meant losing *some* of the crop that was then on, but the fine growing weather that we get at this season of the year allowed the tree to put on new leaf quickly, and the coming blossom was not much affected, but nowadays we get it in December, and by the end of crop, say, in January, the trees cannot boast of ten leaves that are healthy; this being so, how is it to be expected that the tree being exhausted by the ripening of crop and loss of leaf can get through the dry weather and at the same time make new leaf and bud, &c. &c., in time for the rain that we expect such a lot from in March or April? It cannot possibly, and failure is the result. The poor old thing does its best, but flowers do not set on account of the severe shock the tree has sustained. If we cannot do away with it altogether, let us at any rate do what we can to help the tree through the very severe attacks that it has had to go through these two last years during crop. Three years ago I put down 2 oz. of nitrate of soda to every tree in about 15 acres of coffee, and 5 acres adjoining had none at all. This was put down in *October*, and ever since it has had very little leaf disease, and what it has had it has been able to throw off quickly. The 5 acres that did not get it has had it every year, and that badly. In the following *February* I put down the same quantity to 20 acres in another field. This made the tree throw out an enormous amount of dark green healthy wood which looked splendid until about crop time, and then the mischief began. It had a very bad go that year, but a very much worse one this year, and from what I have seen of these two experiments, if I may so call them, I am firmly of opinion that we can do a lot of good with the help of nitrate of soda when the place is free of weeds in October. You cannot have the place too clean, as of course you want to give medicine to the tree and not to weeds. I have heard of some men that have used it and pooh-pooh it as not worth the money, but it is quite possible that they have not given it a fair trial and have not applied at the right time of year, which is October or November and not just before the monsoon. It is certainly expensive, but a ton of it goes a very long way, and the effect of it here has lasted well; but had I my own way I should certainly give the whole estate another dose of it both to the old coffee and young, but of course reducing the quantity to the young coffee to an ounce.

CENTRAL HOTEL,
INFANTRY ROAD, BANGALORE.

(Under English Management.)

The most comfortable and convenient for visitors.
TERMS MODERATE.

Sulphate of iron I have not tried, but from what I have heard of it I should certainly do so if I had the chance, as I am certain that if we cannot manage to help our trees through these attacks that we now get there will be very little difference between this and Ceylon. Want of rain for a bit we can stand if the trees are in good heart, but not if they are wanting in foliage.

You, Mr. Editor, have at odd times pointed out to your readers the desirability of men giving their opinions. I have given mine for what it is worth, and do hope that others will follow suit and give theirs on this most vital of all subjects with us.

MUDIGIRI,
June 19th, 1897.

Yours faithfully,
EXPD. DT.

[Very much obliged, Mr. Expd. Dt., and we heartily wish other men will follow your example.—ED.]

OLD ESTATES IN MYSORE.

DEAR SIR,—I am still on the move, therefore did not see until now your correspondent *Enquirer's* letter in No. 10, p. 334 of P. O., consequently was unable to furnish earlier the information asked for about the big coffee trees mentioned by me in a letter which appeared in your paper of 3rd April last, p. 258. The period alluded to by me was fifty years ago, when the big trees were to be found in many of the original old coffee gardens in the following named localities:—"Palliar Mutt"—"Booden Nagar"—"Dundarabet"—"Bessigna Mutt"—"Mall"—"Jaggar Valley"—"Pundervulli"—"Jukenhully"—"Was-tara"—"Annoor"—"Joldal"—and some other old native gardens, the names of which I cannot just now remember. The original old native gardens consisted of 5 to 10 acres in extent and attached to the dwellings chiefly of the patel or head man of the village. The extensive two and three-hundred acre holdings now owned by native planters are of modern date, and came in with the advent of European planters to the province. In 1849 I was allowed by Patel Woorwollegay Davoy, Gonda of Joldal to take from his old garden six of these big coffee trees; I required them for Dr. Hunter, the Superintendent of the Madras School of Arts, who wanted to test coffee wood for the purpose of wood-engraving. I measured the stems of these trees before despatching them, and found them to be from 10 to 12 inches in diameter. Whether any of those stems have been preserved in the School of Arts or the Madras Museum, I am not aware. It is not unlikely that some stray old trees, or the stumps of some of those big trees may still be found in some of the localities indicated above.

I have heard of big coffee trees having been found in old native gardens in Ceylon with stems 12 inches in diameter. My impression at the time was—and still is—that those trees like that of Mysore were the first imported coffee plants into the island some hundred years ago, and were most probably found in some old abandoned temple land, as the priests of temples in Mysore as well of Ceylon grew the coffee plant for its fragrant blossom.

More recently, about 1871-72, I had occasion to clear out some old native planted coffee from the Mysore Coffee Co.'s "Kengregoy" Estate; the trees were about 80 years old, and the stems from 8 to 9 inches in diameter. The visiting Agent of the Company alluding to these trees in his report compared them to large apple trees. The stems at one time used to stand in the verandah of the Kelagoor Bungalow, but were afterwards consigned to the store room. What became of them ultimately I am unable to say.

When on the subject of large coffee trees, I may mention a very interesting circumstance of these coffee trees found growing in a wild state on the bank of a small pond in the "Kelagoor" forest when being cleared for planting; the trees were over 15 feet high and had stems of 8 inches in diameter, but it was not possible to say of what age they were. The trees were allowed to grow in their wild state and produced large crops, but in the

absence of the proprietor in England they were unfortunately cut down. There were some trees in 1871-72 on the "Kelagoor" estate, which were planted about 1851-52 with stems from 4 to 6 inches in diameter, which may be considered good growth for twenty years' old trees.

To return once more to the subject of Old Mysore Estates. The coffee was originally allowed to grow into *trees*, and not as at present reduced to 4 feet bushes; and I well remember seeing in 1845, and even some years later, ladders being used and boys being sent up the trees to pick the crop; there perhaps are at present very few, if any, European planters in Mysore who witnessed coffee berries being picked by the help of ladders! There was no cultivation whatever in those days; the weed from 3 to 4 feet high was simply beat down with sticks; the pioneer European planters used knives for slashing down the weeds before the crop was picked and the pickers trampled this down into a solid mass, and as the rains at that period were more regular and plentiful than at present, the mass of weed soon turned into fine vegetable mould and was the only manure the land ever got; nevertheless the crops were generally good and more regular than at present. I regret not having tested the average yield from these native grown trees, but in those days we did not trouble ourselves with statistics of the yield of coffee per acre. However, in 1846, when managing Monson's Annoor Estate, now known as Cannon's Mylemoney, the trees on which at that time were from 12 to 15 feet high and well loaded with crop, I was led more from curiosity than anything else to test the quantity of marketable coffee that a tree could yield. I selected a tree and marked it and had the berries picked separately (in those days the ripe and green fruit were picked together); the fruit of that tree was dried and pounded out separately, and the result was a little over 10 lbs. of clean coffee. The next year I had the crop of the marked tree again picked separately and treated in the same way as the previous year; the result however was only 4 lbs. of clean coffee. I much regret that I did not follow up this test on a more extended scale and for a longer time; for although the minimum yield of that tree gives an average of about 2 tons per acre, it is hardly a criterion to judge of the actual quantity of crop these large trees are capable of bearing. My belief however is, that if forced by manure and proper cultivation a coffee tree would be capable of yielding one year with another an average of 5 lbs. per tree, and it has often occurred to me that if practicable, the *tree* and not the mutilated *bush* would be the proper and most profitable mode of cultivating coffee.

At present the *bush* with high cultivation only produces an average crop of 5 cwts. to 10 cwts. per acre of 1,200 bushes, and the *tree* as shown above, without any cultivation, is capable of producing 4 lbs. per tree. What then may it not be brought to do with high cultivation? My impression is that an acre planted with only 800 trees receiving the same amount of care and cultivation as the *bush* would yield 5 lbs. of coffee per tree or a minimum average of $1\frac{3}{4}$ tons per acre. Compare this with the maximum yield of 10 cwts. or $\frac{1}{2}$ a ton per acre from 1,200 bushes. The cost of planting and cultivating 100 acres of coffee trees would not be more expensive than the ordinary cost for planting, but, according to the figures given above, 100 acres of trees would produce at the minimum average of $1\frac{3}{4}$ tons per acre, 175 tons of crop; to produce this quantity of crop from coffee bushes, would require the cultivation of 350 acres of land, which at the maximum average shown above of $\frac{1}{2}$ a ton per acre, would produce 175 tons. There would therefore be the saving in the cost for cultivating the extra 250 acres which would be by no means a small item in the annual expenditure of an estate. Then again there would be a great saving in the initial outlay of an estate in the purchase of land, and in the cost of planting a larger extent of land than necessary, for obtaining the same results produced by 100 acres.

The chief objection that may be raised to coffee tree cultivation would be the difficulty of crop picking and pruning, which however may be overcome in time in some way, if the cultivation was started by some enterprising planter if only on a small scale as an experiment. The trees in the old native gardens were never pruned, but a certain amount of wood was broken off during crop picking, and new wood and suckers would be the result, which in due course bore good crops. Another matter for consideration in favour of tree planting is the great saving of labour there would be in the cultivation of 100 acres of coffee trees, and in 350 acres of coffee bushes, both giving the same results at the end. This is a matter of very great importance in these days of labour difficulties.

Before closing this, I would like to dispose of some ungenerous remarks made by your correspondent *Chicory* in his letter which appeared in No. 33 of P. O. He there states that "the Cannons and the Greens who were officers in the Mysore Commission got their lands cheap, spent little on cultivation, so with a small outlay a small crop sufficed to give them a return which considerably augmented their joy."—All this is pure fiction! There was a Major Cannon and a Colonel Green in the Mysore Commission; the former retired from Mysore even before I came to the district, but the pioneer planters *Cannon and Green* did not belong to the Mysore Commission. If they got their lands cheap, it was simply because the land was of no value in those days. If they did not expend as much money in cultivating their estates, as is done in the present day—there were two reasons for it—first, the system of cultivation carried on in their time did not need much outlay—and second, the pay of coolies at that time was Rs.2 for a man and Rs.1-8 for a woman per month. The crop from their trees (not bushes) if not more was equal to the crops of the present day. If their coffee fetched good prices, it was because *Chicory* was unknown in those days, hence coffee in better demand. That was the time your correspondent should have come out coffee planting—cheap lands!—cheap labour!—cheap cultivation!—cheap living!—cheap everything!—and he would have made a big pot of money—as the pioneer planters Cannon and Green did, and that would be better than making unkind remarks which read like sour grapes.

FRED. D. MEPPEN.

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contains per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Orders should be booked early for the present crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE

COFFEE.

FIRE AND LEAF DISEASE.

THIS is not the recipe for a complete and infallible cure. It is only a suggestion, and not entirely novel; for we have already brought it forward in this paper, in treating on the subject of prunings and disease. Very little interest was then aroused on the subject, a great deal less than it deserved, however unworthily the matter was handled by us. But it is an idea we are going to boom, for all that, so be prepared for any number of recurring paragraphs. This preface is by way of making readers impatient to get at our meaning. Good sign, this impatience. This office

will now open. We start with two modest axioms. Firstly, that leaf disease causes a loss of crop every season of some hundreds of rupees on every acre. Secondly, that no cure has been yet discovered. We shall discuss the origin of the pest. It more than suffices that it is always with us. We also know that it has usually certain times for its greatest virulence, although these are by no means regular. That is to say, that the fungus, like all fungoids has periods of rest and periods of activity. We will momentarily dismiss the possibility of tackling it in its latter stage. But it should by no means be impossible to destroy it, at least in part, when it is in its comparatively unprotected state of rest. Catch it asleep, that's what we mean. But how to do it? Ah, that's where we come in. How does the following extract strike you? It is taken from a certain book on tea, by a Mr. Bamber, who has collected therein the opinions and results of experiments of a host of practical and thoughtful planters. "It was also found that burning the prunings immediately on being cut and better drainage, had the effect of keeping blight in check, causing it almost to disappear from an old clearing which previously suffered considerably from it." The writer was the manager of Sissubari Garden, Jalpaiguri, Dooars.

It is asked, is tea-blight the same as coffee leaf-disease and if not, what is the value of the extract? The answer to this is that the resting spores of leaf disease as well as the eggs or pupæ of blight must rest somewhere. They don't hang about in the air just above the trees to be caught in butterfly nets, though at certain stages they are undoubtedly carried great distances by the wind. The spores must rest either on the dead leaves, on the stem or the branches, or on the ground. We can't very well tackle the ground, and stem washes have been given up as of no use. So that if we destroy the fallen leaves and prunings we shall at least reduce the number of spores that could hatch out for the next attack. Wherefore, try the burning experiment.

No good of course doing this at once all over the estate for the result—good, bad or indifferent—would and could be put down to half a dozen other causes. Try first on a small isolated field, protected from infection from the rest of the estate as much as possible by intervening belts of forest. Have a gang of women and children following the pruners collecting in sacks and carrying away to be destroyed all prunings, while they are still green. This might also be done in handling time. A further step in the same direction would be to sweep up all fallen leaves every month or so, especially during and after a "go" of leaf. The best of all methods to destroy the leaves would be to burn them, but if this was found quite impracticable, large pits could be dug, and the contents could be thoroughly mixed, layer by layer, with liberal applications of quicklime.

The cost will not be great, if the clearing is at all small. A three-year's trial would soon prove or disprove its value. Of course we know that a hundred and one arguments can be advanced against this and any other experiments. We do not stake our reputation on its infallibility. We simply urge that it seems to stand a fair chance of success in a hitherto hopeless war against the most formidable of the foes to our coffee. The motto of the Royal Agricultural Society is "Practice with science." The particular motto for this and similar articles is that no knowledge (science) can be obtained without experiment (practice).

af disease in Nyassa-
land.

A correspondent writes us from Natal in reference to some recent remarks *re* leaf-disease not being known in Nyassaland: "I think you are quite wrong about leaf disease not being extant in British Central Africa. I am most sure I saw leaf disease there; if not 'leaf,' it was remarkably like it. I feel almost certain that leaf disease does exist there and is not dependent on the introduction of foreign or already diseased plants." The writer was planting some years in South India, and knows what he is talking about.

ogus Coffee.

"The enclosed cutting," says 'Cup-of-Coffee,' "from the *Madras Mail* some four or five years ago, may be of interest to some of your readers." Very certain it is that these illegal operations have in no way ceased in the Continent and England, though it is possible that the extremely low prices ruling at present for Santos may sensibly check their profitable accomplishment.

The arrest of two men at Lille for manufacturing coffee has led to an investigation of their methods. Their plant, estimated to be worth 1,000 f., and a large stock, were seized. The following is briefly the method of manufacturing this coffee. The raw materials are composed of chicory flour, and sulphate of iron in powder, the latter giving the necessary colour. The paste made with the mixture of these materials is enclosed in a cylinder and then pressed with an hydraulic motor. Through five different openings it comes out in pieces measuring 30 to 35 centimetres in length by 4 millimetres in thickness and 3 centimetres in width. These are again powdered with flour and immediately placed between two metallic punching plate before cutting each piece in such a way as to give it an almost perfect resemblance to natural coffee. The two men employed in their manufactory, eleven men and seven women, the latter having to separate the berries which were not properly moulded from the others. These producers have arrived at such perfection in France that some deputies have just laid a measure on the table of the French Chamber respecting the article which runs as follows:—"It is forbidden to expose, to place on sale, to import or export any manufactured product which, by its shape, colour, general aspect, is capable of being confounded or bought as coffee in green or terrified berries." The other articles set forth the penalties:—50 francs to 3,000 francs, five and three months' to a year's imprisonment; penalties to be doubled if the product is recognised as baneful to health, or if it has been fraudulently mixed with natural coffee, &c.

The Market.

There has been a very quiet tone this week, says the *P. M. Review* of the 29th May, the auctions have contained only about 11,000 bags, instead of from 50,000 to 60,000 bags, as was mostly the case until about a fortnight ago. The bulk too of that offered has been of common quality, for which there is little demand, and no inducement to dealers to add to their stocks. Consequently rates for the lower sorts have further given way, but on the other hand, anything at all approaching fine quality has sold well at rather dearer rates. The range of values between common and fine quality continues to widen, and as there has been such a small quantity of the latter there is every probability of a still wider range. It is very remarkable that all the countries from which fine coffee is received have this year shown, from some cause or another, a falling off. The crop of Vera Paz certainly does not show much reduction, but the quality is this year so bad, owing it is said to excessive rain at the time of harvesting, that it is quite useless for home consumption.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended May 22, 1897.	Tons. 356	Tons. 317	Tons. 790	Tons. 632	Tons. 14,245	Tons. 12,573
For the 20 weeks ended May 22, 1897.	5,923	6,051	7,603	9,240	...	...

Abyssinian Coffee.

We learn from a London produce paper that Abyssinian Coffee has come in for a rather larger share of attention from buyers, and sales are said to have been concluded for ordinary quality at 60s. to 65s. per hundredweight. This information should carry a great deal of interest to planters, who have, we understand, become greatly disheartened of late in consequence of the bad accounts they have received of the rates being paid for their supplies in the London and other markets. The present stocks of 7,200 bags are smaller than existed a year ago, and we should say in no way excessive in view of likely demands. Good and fine qualities are particularly scarce at the time of writing, while the lower grades are freely offered, and in a few instances holders have been compelled to take lower prices in order to make progress.

It has been argued that the recent low prices of coffee may eventually prove a benefit rather than a misfortune, inasmuch as the greater cheapness of coffee by bringing it within the purchasing power of even the poorest classes will tend to make it an article of general consumption, by which the demand will be extensively and permanently increased. The Rio coffee baggers (*ensacadores*) although observing great prudence in their transactions were unable to avoid considerable losses in December, when, after a temporary tendency to improve, the prices on consuming markets again suffered a relapse. There has been a full demand for coffee, and the quality of the crop has been uniformly good both in Rio and S. Paulo. By the reports received it appears that the outlook for 1897 is more encouraging, although the opening up of numerous new plantations indicates a prospect of increased supplies in the near future, and the situation from the planter's point of view is not altogether bright. The stocks on exporting markets are large, but the approaching crop is expected to be much smaller than that of 1896-97, while consuming markets are provided with but average supplies. The crop for 1897-98, beginning in July next, is estimated at for Rio, 3,000,000 bags; Santos, 4,000,000; total 7,000,000.

LEGUMINOUS SHADE: A CRITICISM.

MR. B. NELSON's contributions on "Coffee cultivation without manure" form some of the most valuable literature extant on the subject of manuring coffee estates. But there is something which some planters find it difficult to acquiesce in, and that is Mr. Nelson's saying that by merely burying the twigs and leaves of *Erythrina lithosperma* in the ground, the coffee is supplied with nitrates ready made.

We fail to see how this can be. The bacteria in the nodules on the roots of the leguminous tree supply the host tree with nitrogen. This is built up in the tissues of the tree, and when the leaves and twigs of the tree are buried in the ground, all it does is to increase the store of humus in the soil. It is undoubtedly superior to ordinary humus owing to its being so rich in nitrogen; but it is not on that account any more available than is ordinary humus. What I am driving at is this: that it is just as necessary for what we may call the leguminous humus to undergo the process of nitrification before the nitrogen contained in it can be transformed into nitrates and thus be made available to the coffee as it is necessary for any other humus to do. Even cattle manure has got to undergo the process, as witness what Dr. Fream says:—"A good illustration of the difference between soluble and insoluble plant food is afforded by nitrogen. Organic nitrogen, as it exists in farmyard manure, is insoluble in water, and therefore the plant cannot make use of it. The same nitrogen, after the process of nitrification, takes the form of a nitrate—nitrate of lime usually—which is soluble, and, dissolved in water, can be taken up by the plant."

I suppose it will not be denied that the nitrogen in the humus resulting from the decay of the buried twigs and leaves of E. L. is "Organic Nitrogen," and, after the above quotation, it must be admitted that it is necessary for it to undergo the process of nitrification before it can be availed of by the coffee.

So it turns out then that the nitrifying bacteria are something that we cannot afford to despise, and something that we must concern ourselves very intimately with. Mr. Nelson, I think, said in one of his articles that this was a *poochee* that we need not concern ourselves about, but I think he meant by that they were bound to be so plentiful in the soil, and increased so rapidly under favourable conditions, that there was no need for us to trouble ourselves particularly about them. A very good plan of 'inoculating' a poor ridge with these bacteria is to top-dress it with jungle top-soil after a digging: and one way to promote their activity is to keep the soil constantly stirred.

In Mr. Nelson's plan of manuring his trees, the well-known danger of too much humus is bound to arise, and there is, therefore, one manurial substance which cannot be dispensed with, this is lime. It may be contained in large quantity in the branches and leaves of E. L. and in the humus resulting from the decay of these, but you see it is here in a combination in which it certainly cannot be available to promote the decomposition of the humus of which it forms a part; and it cannot be even available as plant food till the combination between the ingredients forming the humus is thoroughly broken up. Lime is wanted to promote the decomposition of the humus, more especially as the laterite coffee soils of S. India are deficient in this valuable ingredient.

A correspondent once asked whether lime should be applied slaked or unslaked. I think there is no necessity for applying it unslaked. Quicklime only loses its efficacy when it combines with the carbonic acid of the atmosphere. It absorbs carbonic acid if left exposed after being slaked. Slaked lime goes further than unslaked, but should be applied immediately and lightly forked in to prevent the air having play upon it. Its efficacy consists in its absorbing

carbonic acid resulting from the decay of the humus in the soil. There may be this danger in applying unslaked lime, and that is that the burning resulting from its being moistened by the dew or rain may be the death of the nitrifying bacteria, as a temperature of 140° F. stops their activity.

H. G. R.

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.,
(SOMETIME AGRICULTURAL CHEMIST IN COORG, SOUTH INDIA,
TO MESSRS. MATHESON AND CO.)
(Reprinted from the "Madras Mail.")

V.

DRAINAGE.

SINCE a Committee of the House sat in 1845 to consider the question of improvements in Agriculture, drainage has ranked first in the opinion of practical agriculturists as a means of permanently improving the land. The evidence available shows that there is always an improvement in the yield of the land where it is thoroughly drained. The ratio of improvement is usually not less than 20 per cent. on soils where the natural drainage is fairly good, and in the case of moors and swamps the land is improved from a state in which it would not grow food stuff of any particular value to a condition of first-class fertility, as may be seen in parts of Yorkshire, Lincolnshire, Cambridgeshire, Holland, &c. The importance of the physical condition of the soil is quite as great as its chemical composition, and exerts as great an influence on the growth of the plant. Plants appear to have a selective power as regards soils, and refuse to grow on those that are unsuitable either from a physical or a chemical point of view. Tea will thrive luxuriantly on stiff clayey soils that are quite unsuited to coffee. The latter is very sensitive and shows unmistakably its preference for light, sandy well-drained lands. Looking at the subject carefully, it is apparent that coffee requires a soil which offers but little obstruction to the passage of its roots,—one through which air as well water can readily find its way.

It is necessary to consider some of the characteristics of the various soil substances before entering on the consideration of the effect of drainage on the soil. Firstly, sand. This is present in almost all cultivated lands to a greater or less degree; coarse, dry sand is almost incapable of taking up moisture from the air; fine sand will sometimes absorb 1 to 2 per cent. Soils in which sand predominates in large coarse grains are poor and hungry; they do not retain sufficient moisture for the growth of the plant. Quartz soils are often of this nature. Dry clay readily absorbs moisture and holds it very tenaciously. When dry it will absorb from the air about 5 per cent. of moisture in twenty-four hours. It possesses the power of deodorising and cleansing water filtered through it. According to Professor Way, the matters are oxidised, if the filter is sufficient in depth: the nitrogen of the organic matters is converted into nitric acid, the carbon to carbonic acid, and the hydrogen to water; the finer the particles the greater the action. Clay, moreover, is very plastic and mobile; it is when wet a dense non-porous substance impervious alike to water and air; if dried, it shrinks and cracks, and the more rapidly the drying takes place the greater the number of fissures. Fertile soils always contain more or less clay; when mixed with a certain amount of sand and presenting certain physical characteristics, they are known as loams. In a clayey loam, that is where clay predominates, tea does well; in a sandy loam, coffee. The generality of soils in Southern India and Ceylon that have not suffered from

surface wash are sandy loams of varying degrees of fertility, depending to a considerable extent on the fineness of the particles of which they are composed. Some of these soils are very impervious to air and water when once saturated. If the soil become full of water, like a sponge resting on a plate, that is to say, if it rests on an impervious strata, the water does not pass through, taking air with it, but having saturated the soil flows off the surface, carrying with it the fine alluvium and soluble salts. For the time being the chemical actions cannot proceed within the soil, and as the supply of available oxygen is soon consumed the water stagnates, becomes sour, and unfitted for plant-food. Drains are therefore necessary to prevent the soil becoming saturated with water. When dug sufficiently deep they not only act as discharges of surplus water, but as aerators of the land. As the water flows through the land it carries air down with it, and as the air is continually renewed the changes within the soil proceed in a healthy manner. By drawing the rain through the soil they prevent surface wash and loss of valuable soil and manure. As the soil is aerated to a greater depth by thorough drainage than by any other system of cultivation, the roots of the plant are able to find conditions favourable to their growth further from the surface. This means that the available supply of plant-food is increased, as the roots have an increased area of growth. They are also less liable to suffer from the heat of the sun during a severe drought, as there is an increased layer of soil to protect them, and as the moisture is evaporated from the surface the supply brought up from below by capillary attraction is intercepted by a greater mass of roots of extended depth, and the plant derives greater benefit from it than on undrained lands, where the roots form a thin superficial layer. It is for the above reason that in England in seasons of severe drought the grass has so often been seen to be fresh and green over the drains, while it was burnt up and withered between them. Where wash has not removed the surface soil, the general characteristic in Coorg, the Wynaad, and parts of Ceylon, is first a thin layer of vegetable mould, resting on sandy loam, under which is clay, then ferruginous ground, clay, laterite and country rock, chiefly gneiss. Sometimes one or more of these beds are wanting, and they vary in thickness from a few inches to many feet. It is at the junction of the soil and gravel that a pan most often forms. The gravel gets cemented together and obstructs the passage of the rain through the soil. In such cases it does not require a great excess of rain over and above that which is carried off by surface drainage and evaporation to saturate the soil. On moor land these pans are often formed, and bogs, morasses, or swamps result. It appears at first sight strange to find on a hill side a bog, but such are common on the hills of Scotland, Ireland, England, Wales, and are not unknown in Ceylon and South India. Such lands are reclaimed and brought into cultivation chiefly by deep drainage, which, by lowering the water level, allows the air to follow the rain through the soil and gravel to the clay. Sometimes, where the gravel is absent, the pan is formed by a calcareous ferruginous layer below the soil resting on the clay. Needless to say these pans not only prevent the rain from penetrating the land, but also obstruct the rise of water from below. Thus in drought the only available supply of moisture for the plant is that above the pan; when this is exhausted, the plants are soon scorched by the sun, and drop their leaves. It is not *Hemeleia vastatrix*, it is want of moisture. These pans break up and become permeable when the iron salts which bind the particles together are fully oxidised. An excess of iron existing as lower oxides is prejudicial to plant life, but when these are saturated with oxygen they accelerate the decomposition of organic matter, and are most beneficial to the plants. Recent experiments on the absorption of nitrogen from the air show how necessary it is to have it brought into intimate contact with the feeder roots. Nitrifying organisms, according to the

balance of evidence at present available, assist the plants in absorbing or taking up nitrogen from the air by roots. If the air is excluded by water which is surcharged with organic compounds and soluble salts, a healthy action cannot proceed. Further, the sap is diluted, and the evaporation of excessive quantities of moisture from the leaves of the plant lowers the temperature and vitality of the plant, rendering it more susceptible to disease.

Where the plants are water-logged during the monsoon they make no growth. On land that is easily saturated continuous rain does less harm than heavy showers daily followed by hot sun. In the latter case the sap is as rapidly evaporated as it is formed, resulting in a greatly depressed vitality of the plant. The plant has to live in a hot, moist atmosphere. The evaporation from its leaves and from the soil are most favourable to the development of fungoid growths, such as *Hemeleia vastatrix* and black rot on coffee, smut and mildew on wheat, &c. Johnson and Cameron thus express their opinion:—

“Where too much water is present in the soil, that portion of the food of the plant which the soil supplies is so much diluted that either a much greater quantity of fluid must be taken in by the roots, much more work done by them that is, or the plant is scantily nourished. The presence of so much water in the stems and leaves keeps down their temperature also. When sunshine appears, an increased evaporation takes place from their surfaces; a lower natural heat, in consequence, prevails in the plant, and the chemical changes on which its growth depends proceed less rapidly.” Soil condenses many times its volume of gas within its pores, but the amount is dependent on its nature and the percentage of moisture present. Calculated on Blumtrilt and Renhardt’s figures the amount is as follows:—

1 cubic foot of	Yields ozs. measures of gas.
Garden soil moist	2,000
” ” air dried	5,400
Clay moist	3,500
” ”	4,000
River silt moist	2,900
” air dried	4,800

If the soil is not merely moist but surcharged with water, the amount of gas held in the pores will be very small, and if the supply is not renewed the water becomes charged with effete organic matter and saline compounds. If the water is removed by evaporation, these may be left as a saline efflorescence on the surface: a want of recognition of this fact has often led to failure when land has been irrigated. Water holding large quantities of saline matter in solution was poured into the land, the natural subsoil drainage being defective, the water was evaporated, leaving the saline matters in the land. Such land soon became so charged with salts that the generality of plants would not grow in it; such extreme cases rarely happen on coffee or tea estates, as they are generally so situated that the salts brought to the surface by evaporation are carried off by surface wash, and though the land is rapidly impoverished, the plants are not killed off by excess of saline salts. These are formed in the soil by the natural decomposition of the rock particles, which are dissolved by the water and carbonic acid, then raised to the surface by capillary attraction, the sun evaporates the water and leaves them on the surface or close to it.

Drainage forces rain and air to pass into and through the soil. The oxygen contained therein brings the organic matters to a state fit for plant food. It oxidises the iron compounds, breaks up the hard pans formed by the ferrous salts, and converts these lower oxides to the ferric state, in which form they are exceedingly valuable. It carries the soluble salts down from the surface, but these are not lost, as the soil forms an efficient filter, and if the drains are sufficiently deep, very little phosphoric acid, ammonia, or potash is lost. When the drains are sufficiently deep and not too close together, so that the land is well drained and not over-drained, sufficient water is

held in the land to supply the requirements of the plants. The action of drainage is to make the land more porous and so increase its power of capillary attraction, enabling it to bring up water from a greater depth; to force the rain through the land, so preventing loss of the fine alluvium and soluble salts by surface wash. As water is evaporated from drained lands, more moisture is brought up from below, and the land being in a fine physical condition the supply is equalised and not so easily exhausted. The soluble salts brought up are carried down by the first rain, or even by a heavy dew, thus circulating in the soil about the roots of the plant. These are not likely to accumulate in injurious quantities, as any excess over and above that which the soil can hold and the plants take up is removed by the subsoil drainage. The rain contains nitrogen as ammonia, as nitrates and nitrites, carbonic acid and dissolved oxygen; it also carries air with it, which supplies the nitrogen to the nitrifying organisms. By fully aerating the land, the available plant food is kept in a more equitable condition of supply than where the excess of salts brought to the surface by evaporation are carried off by surface wash and the water held by the soil has to be evaporated before air can enter. These are some of the more important reasons for deep drainage. In my next article I will take up the discussion of the best methods of drainage.

BANGALORE, }
14th October. }

WILLIAM PRINGLE.

TEA.

Indian Tea Association. We have received the Annual Report of the General Committee for the year ending 28th February 1897. The pamphlet contains as usual a great amount of interesting matter, which we shall review at length next week. In the Monthly Return of Sailings of Indians and Ceylons, dated 14th June 1897, we notice that the season's shipments are up to date considerably ahead of those last year.

Low prices.

The Indian average for the week ending the 28th May was $5\frac{3}{4}d.$. We think this is about the lowest average it has ever touched, despite the fact that prices for tea are invariably low at this time of year. Yet the Ceylon average stood at $7\frac{1}{2}d.$. Java and Natal, on which we always look down, were $5\frac{3}{4}$ and $5\frac{1}{2}d.$, respectively, while Singapore, a new arrival, touched $7\frac{1}{2}d.$. Extremely lugubrious reading this, were it not for the fact that bottom price was entirely owing to two wretched Cachar gardens that swamped the Indian average with more tea than all the rest of the districts put together. The price realised by these unhappy totes was $4\frac{3}{4}d.$! Think of that, ye boomers in tea, and rejoice! Assam had the very respectable average of $9\frac{1}{2}d.$, Darjeeling the same, the Nilgiris got $7d.$, South Wynaad $7\frac{3}{4}d.$, and Travancore $6\frac{1}{4}d.$

London Market.

INDIAN TEAS.—There has been a further diminution in the quantity brought forward, says the *Produce Markets Review* of the 29th ult., which included a considerably larger proportion of the inferior descriptions. For these, as has been the case for some time past, the demand is inactive, the lower quotations failing to stimulate trade; holders are therefore unable to reduce their stocks of this class of tea to any appreciable extent. The medium grades, on the other hand, are readily taken at fully former rates. The prospects

of an adequate supply of these teas for the next few weeks is not encouraging, judging from the comparatively limited quantities offering, and it is quite possible that an improving tendency in prices will prevail until a good assortment of the new crop is available. An extremely limited selection of the fine and finest sorts is offering, more so than usual at this period, and as there does not appear to be any chance of an increase in the quantity for some little time, the stocks held by the trade should prove remunerative. There were 10,000 packages catalogued for public sale, and about 8,000 were sold. The above included 106 packages of New Season's, mainly from the Assam district, and being of very fair quality for early arrivals they were easily disposed of at satisfactory prices. There was also a small invoice of Singapore Tea, the leaf being, on the whole, well made, but the infusion falling short of both Indian and Ceylon. The rest of the sale principally consisted of Calcutta-bought and reprinted Teas, for which there was a poor demand, and a large quantity was withdrawn.

CEYLON TEAS.—The quantity offered has again been large, although somewhat smaller than last week, but, as the demand continues good, prices remain strong. The inquiry for the lower grades is active, especially for Leaf kinds, and, although no change in values has taken place, the market is very firm. Medium and finer descriptions have been well competed for at late rates, and as the finest kinds are still scarce, high prices were paid for the few lots offered. At the public sales 23,000 packages were brought forward, of which about 1,300 were withdrawn. Shipments to the United Kingdom to the 4th instant consisted of 36,902,296 lbs., as compared with 34,513,332 lbs. to the same date last year.

THE LATEST TEA DRIER.

AN UNPRECEDENTED SUCCESS.

OF the many new patents in Tea Machinery which have been offered to the Tea Planting community during the past year, Davidson's Patent Automatic Tea Drier stands first in the ranks, and after a full season's working in Sylhet has been pronounced by numerous experts to surpass, both in quality and quantity, the work done by any other Automatic Drier in existence.

For the information of our readers we shall give a full description of this novel apparatus and the work that it has done during its trial in Baraoora Tea Factory, Sylhet, during past season.

That Davidson's New Automatic Drier can work with absolute safety at a temperature of $300^{\circ}F.$ will come as a surprise to many, and that it has been found impossible to burn the tea with the apparatus, even though negligent coolies be in charge, may seem an over-estimated eulogistic statement, but it is nevertheless true.

An advertisement of this Machine appears on the back page of this issue, in which an electro engraving of the Drier is to be seen.

The Drying "Box" or "Chamber" of the Machine contains a series of travelling webs; the leaf is fed into the Drier from the top and delivered at the bottom, but one of its peculiarities is that the rolled leaf on entering the Machine is subjected immediately to a powerful "downdraft" of air at a very high temperature, which instantaneously checks the "fermentation," and as the

leaf is in a moist state it is found that even at a temperature of 300°F. the leaf is not in any way scorched or burned, but on the other hand it is the means of developing a beautiful aroma in combination with a briskness that would otherwise be unobtainable.

The travelling webs carry the leaf through this highly heated air and empty it into an atmosphere of reduced temperature and so on as web after web is reached the temperature is found to be lower till it is exhausted at a final temperature of 120°F. to 160°F. according to the regulation of the Machine. The finished tea has a delicious aroma and feels quite cool to the hand.

The hot air is supplied by a powerful compound Multi-tubular Sirocco Stove of an entirely new design which considerably reduces the consumption of fuel as compared to other Machines. The downdraft of air through the tea is produced by means of a large centrifugal fan, to which pipe connections may be attached in order to discharge the moist warm air from the Drier out of the building; this not only enables the Factory atmosphere to be kept at a comfortable degree of heat, but also prevents the Factory air from being charged with moisture, which is highly injurious to any finished tea that there may be in the building. The Machine in Baraoora Factory made no less than 700,000 lbs. of tea last season by itself, and Mr. Bull, the Superintendent, has stated that he can always depend on its drying 50 maunds (4,000 lbs.) of tea per day without in any way interfering with the coolies in charge.

The prices realised by the sale of Baraoora teas last season showed an improvement of $\frac{3}{4}$ d. per lb., and as all the Brokers' reports describe them as *brisker* in liquors, the enhanced price has been entirely attributed to the New Drier.

We have to congratulate Messrs. Davidson & Co. on the success of their latest invention, and we wish them every success with it in the South Indian Tea Districts.

DIGESTED TEA NOTES.

CULTIVATION.

To start with, it is patent that different kinds of soil require different treatment. Yet patent as it is, most planters seem perfectly oblivious of the fact. Further, that it is as easy to *over-cultivate* certain soils as to *under-cultivate* others. With light soils, try and render them more compact and absorbent; while with heavy soils try to make them more open and less absorbent.

Sandy Soils.

Don't require so much forking or digging as heavy soils, being more porous. Being poor in organic matter, allow the weeds to grow a bit and then hoe it in. Some people have very fanciful notions about weeds, especially in clean-weeded Ceylon. Yet four or five weedings, if the stuff is thoroughly well covered in, is ample in the most forcing climate, while on very poor soil and in cold climates two thorough weedings would be enough. But it should be *thorough*. Weeds, by nature of their stronger digestion (root-action), can assimilate food tea cannot tackle. When

the weeds decay, they give up this food ready digested for use. It would be extremely useful to change the prevalent weeds into leguminous ones, a process that could certainly be accomplished in time, for obvious reasons not necessary to dwell on. But the jungle, *i.e.*, weeds, must be buried *green* and moist. Otherwise if sun-dried and hardened it will further lighten the soil, instead of rendering it heavier.

At the end of the season, and after the pruning, work the soil deeply and leave as rough as possible for the cold weather. Unless the prunings are very light, do not bury them in a light soil, as large coarse prunings decay very slowly and render the soil more porous than ever.

Clayey soils.

Just work the other way about. First attend to the draining, which should be thorough. Good deep cultivation is wanted, but must never be done when the soil is wet, as this makes them cake and clod more than ever. It is good to bury coarse prunings, as this opens up the soil. If the weeds are allowed to dry before burying, so much the better. A thorough forking or hoeing after pruning is even more important than in sandy soils, as the clods left untouched by the coolies' feet will help to sweeten the soil all through the cold weather. In Upper India forks are comparatively unknown, all the work being done by large hoes or mamoties. Careless forking, *i.e.* bending, exposing and twisting the roots, does a great deal of damage. The proper way is to begin forking close to the stem, and digging outwards.

On hilly gardens weeding should always be done by hand in the rains and never by hoeing or scraping. This of course is to save wash. A good reason why the last hoeing or forking should be as soon after the prune as possible is to allow the broken and damaged roots ample time to recover before the first flushes are on.

Drainage.

It is of first importance in a flat country to select for tea cultivation only those blocks which can be cheaply and easily drained of their surplus water. Some large gardens in Assam are on such a dead level that the greatest fall they can command is 4 feet. Tea will never flourish on badly-drained soil. Well-drained land is far warmer than badly-drained soil, as the heat employed in the latter case to evaporate the surplus moisture all goes to warm the land in the former instance. Well-drained land is also far more friable, better aerated and without doubt far more fertile. It is sometimes thought that drainage renders plants more liable to drought. This is wrong. The soil being more porous, the subsoil water can rise more easily than ever.

In undrained land the surface soil in dry weather contracts into hard masses, and the deep subsoil water has no power to rise to the surface. Stagnant water makes the soil sour, prevents formation of nitrates and produces poisonous compounds which in time kill out the plants growing in it.

But bear this in mind. Easily friable open soils with a free subsoil can be greatly harmed by draining.

As a general rule, the deeper the drains the better. Steep slopes should be always drained, through not so much for drainage proper as to stop wash.

Method of draining.

No lateral drains should enter the main drain either at right angles to it, or exactly opposite each other, as they quickly get silted up and useless. There is no object in having lateral drains wider than 9", as the unoccupied space is wasted. The width apart

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depends altogether on the class of soil (heavy=close; sandy=further apart) and the slope.

Clearing.

This is far too carelessly done as a rule. In Assam one deep-hoeing, and, after staking, cleaning the spots round the stakes, are all that is done. The whole clearing should be cleaned and the soil pulverised. Otherwise cockchafer grubs cannot be discovered and killed as they should be. Instances are known where young clearings planted at stake have been completely destroyed in this way. In Assam planting at stake is very precarious owing to droughts. Some good can be done by thatching the seed, but unless regularly "ferned" it harbours insects and grubs of all kinds. Two or three seeds are usually sown at each stake (but Mr. Bamber does not state whether they are germinated first or not), and if all dangers are warded off, the operation is very cheap, saving both money and time.

In China the seed is gathered in October, kept mixed with sand and earth during winter, thus keeping them fresh until the spring.

Nurseries.

The site and soil of the nursery is extremely important, as stunted plants never develop afterwards properly; essentials are: a good soil, subsoil porous, protected sufficiently from sun and strong wind, lowlying position and proximity to water. The soil should not be of better soil than the rest of the garden, as the plants would be unduly checked in planting out. But it must be perfectly clean from all weeds and grubs and thoroughly drained, also sufficiently stiff for soil to hold round roots when transplanting. If too much pulverised, the surface will cake when watered, hindering growth unless continually stirred. Before sowing, germinate seed before rain, not when *wet*, but when slightly moist. Shade in drought, but remove shade when plants are up, as this would weaken them.

The distance apart varies a great deal, depending on the jat and the time the seedlings remain in the bed. In Cachar and Sylhet 4" x 4" is usual for ordinary purposes, and 6" x 6" for vacancies. In Assam they are put out 8" x 9" and 10" x 10" respectively. Never over-crowd them. Far better spend extra money in increasing your nurseries, than save at the expense of your plants.

Be very careful that in making the beds, the sub-soil from the drains is not thrown over the surface, as this will check the growth for some weeks. In transplanting, always reject the weakly and stunted plants for all purposes. Transplanting is best done in cloudy weather, to check evaporation. Actually *wet* weather is bad, as the soil sets in hard lumps round the young plant. Keep as much ball on as possible, to prevent injury to the tender rootlets. If main root is injured or twisted, cut off above damaged part with a very sharp knife. If earth won't adhere properly, extra care must be taken in transplanting so that all the roots are placed in a proper position.

Tipping or even cutting down the plant to near its root is sometimes attempted before or after transplanting. Cutting should be done some time before or some time after, in order not to check growth unduly. Tipping is usually done when the plant is 2½' to 3'. Seedlings that have sent out lateral branches in nursery should never be cut low down, but long whippy plants without laterals should be cut low, to force side shoots and develop into a bush. The usual age of the seedling when transplanted is 12 to 18 months, but when of good growth and going into rich soil on the plantation, somewhat younger. For steep or shallow soils a good root growth is essential, to avoid harm from drought.

Old nurseries having all their top soil removed by the young

plants should, when the garden is planted up, be manured heavily with swamp soil or other dressings; so that they can be planted up and not form an eyesore on the estate.

The distances in planting out vary greatly. The better the soil and better the jat, the wider apart they can be planted. The usual distance is 4' to 4' 6", going in some cases to 5' or 6'.

Where the rainfall is very heavy, planting is usually done closer, the plants being smaller than where the rainfall is less. This is explained by the fact that the greater the fall of rain, the greater area of leaf is required to remove the excess of rain by evaporation. Consequently the leaves are set close together on the stems, diminishing the length of the shoots and also the size of the bush itself.

Vacancies.

This is an extremely difficult matter to tackle, *unless* dealt with systematically from the first. Old plants rarely die out. Vacancies are chiefly caused by planting out weakly seedlings; also by undrained soil, decaying roots of certain forest trees, white-ants, careless cultivation, and cattle. On many gardens 10 per cent. of vacancies is not uncommon, while it frequently amounts to 15 or 20 per cent. This means that from 1 to 2 acres in every ten are unplanted, but are cultivated at just the same cost as the rest. Ten to twenty rupees wasted out of every hundred spent on cultivation is no light matter.

So that the question of supplying these vacancies is extremely important. When a plant dies, remove immediately from the soil and ascertain cause of death. Dig a large hole *in situ*, and let it remain unopened for some time; mix with quicklime if any fungoid growth is found. Place two or three baskets of cattle manure or rich well aerated swamp-soil at bottom of it. Then after some little time, put in a well-grown and well-rooted two year old plant of similar jat to surrounding bushes. Plant extremely carefully, press limed soil firmly round its roots, and insert a large pole to mark the spot. Specially trained men should inspect the transplants until firmly rooted. Hand weed for a foot round the stem: don't dig or fork near. For some years the plucking and pruning should be very careful. Colonel Money recommends sowing in specially made pots or bamboo baskets, and planting as they are, breaking the pots *in situ* to allow free passage of roots.

Seed Bearers.

Tea seed should be sown as soon after planting as possible. It should also be of the soundest and best quality obtainable; poor seed always makes poor plants. Seed bearers should be in a secluded spot as far as possible from any plants of inferior jat, as otherwise cross-fertilization will invariably take place. Curiously enough the purest indigenous are not the best as seed-bearers, but "indigenous once removed" produce excellent seed and plants.

The soil for the seed-garden need not be so rich as for flushing. But mineral food of all kinds is required, especially lime or magnesia, also chloride of sodium or common salt; these all produce fruitfulness. Nitrogen is not needed in great quantities, as this promotes flush rather than seed.

Little or no pruning is required, but allow the bushes to grow up into trees with long straggling laterals, towards the extremities of which are produced the largest number of seeds. The only pruning required is to remove excessive wood and decayed matter from the interior, to allow a free current of air. They should be widely placed to prevent "drawing," and to allow plenty of space for deep cultivation, which latter is very important. In old gardens where the yield is falling off manuring will be found of use.

DISTRICT ASSOCIATION.

KANAN DEVAN.

Annual General Meeting held at Devikulam Bungalow on Saturday, 29th May 1897.—*Present*:—Baron J. von Rosenberg (*President*); Messrs. W. Milne, R. Hedger, E. Harley, W. O. Milne, A. H. Mead, H. S. Buist, A. F. Martin, J. Hamilton Hunter, R. F. Russell, F. Armstrong, H. M. Knight, T. W. Schmid, W. D. Martin, F. J. C. Martin.

Read notice convening the meeting.

Read and confirmed minutes of last meeting.

Election of office bearers for the year. Proposed by Mr. A. F. Martin, and seconded by Mr. Schmid, that Mr. Milne take the chair. Mr. Knight then proposed that Mr. Sharp and Baron J. von Rosenberg be re-elected as Hony. Secretary and President, without ballot, as a complimentary recognition of their efforts on behalf of the Association. This was seconded by Mr. Milne and carried with acclamation. Baron J. von Rosenberg having made a suitable reply for himself and Mr. Sharp, who was unavoidably absent, Messrs. W. Milne, W. D. Martin, and F. Armstrong were elected by ballot to the Committee with power to add to their number.

Roads and Communications.—Read letter from Mr. G. D. Gordon re work on Ghât Road. Mr. Knight having offered to undertake all work on the road from the Mettu to the Panniar river, Mr. Milne proposed that Mr. Knight's public-spirited offer be accepted with thanks, and that the road maintenance of Section Devikulam to Chinnakanal be entrusted to the Devikulam and Periakanal Estates, and that Mr. G. D. Gordon be asked to undertake the revetting and blasting. This proposal was seconded by Mr. Schmid and carried *nem. con.*

Resolutions of last meeting not yet given effect to. Proposed by Mr. Milne, and seconded by Mr. Russell, that the question of the insanitary condition of Bodinaikanur and of the printing of duplicate discharge certificate be now taken in hand by the President and Honorary Secretary respectively. Carried.

Account and Balance Sheet for the Year.—Proposed by Mr. Knight, and seconded by Mr. Armstrong, that a special committee be appointed consisting of Messrs. Milne, W. D. Martin, and the mover, to enquire into and report upon the accounts, and to deal with the question of low-country establishment and Mettu Rest House charges. Carried.

Communications from the U. P. A. S. I.

Read circular from the Secretary re registration. Proposed by Mr. Milne, and seconded by Mr. Knight, that the K. D. P. A. delegate to the next U. P. A. S. I. meeting be instructed to vote for registration. Carried.

Read Circular re Famine Fund.

It was unanimously resolved that this Association disapproves as such of giving any pecuniary assistance to the Famine Fund, owing to, and as a protest against, the refusal of official assistance by the Madras Government to members of this Association when sending their officers to a famine-stricken district and importing several hundred coolies at an irrecoverable expenditure of Rs. 8 per head.

Read letter re Presentation of an Address and Casket to the Queen-Empress.

Resolved that this Association approves of the principle of voluntary contributions from individual members of Associations, and is opposed to the cost being taken from the Reserve Fund

Membership.—With reference to a resolution passed at last meeting re membership, it was proposed by Mr. Knight, and seconded by Mr. A. F. Martin, that the wording be changed from "allowed a vote" to "allowed membership, the number of votes held being limited, etc."—Carried.

Transit Service between Amanaiakanur and Bodinaikanur.—Resolved that the President be asked to put himself into communication with the transit companies with a view to accelerating the service. The meeting closed with a vote of thanks to the chair.

A. H. SHARP,

Honorary Secretary.

THE OPINION AND THE FACTS.

FIRST let us have what the doctor said, then the facts upon which he based his opinion, and finally we may ask whether the facts justified that opinion.

The doctor's opinion was this "*The man is suffering from chronic inflammation of the brain.*"

The facts as set forth subsequently by the patient himself under oath, and also verified by careful investigation are these:—

In August, 1889, the first symptoms of disease appeared. He had a bad taste in the mouth, and a thick, slimy phlegm covered the tongue and teeth, so that he was often obliged to wipe it out with a handkerchief. He had no appetite, and after eating the simplest thing he felt great oppression, and pains at the sides and chest. Later on he was seized with dizziness and dreadful pain in the head, the back of the head being swollen, and so hot that it seemed on fire. This pain in the head grew worse, until the patient fancied his head must burst; and, as it was, he nearly went out of his mind with the agony of it. He got little or no sleep night or day, and as he could take practically no nourishment—that is, nothing at all equal to the needs of the body—he gradually fell away until there was scarcely anything left of him but skin and bone. After a time a hacking cough fixed upon him, and he constantly spat up much matter. At this point his malady had some of the indications of consumption.

For a considerable time Mr. Manning (the patient's name) was confined to his bed, and for nearly a year was unable to leave the house. As a rule he would rise from his bed, about noon, and lie on the couch the most part of the day. To show his weakness we need merely say that he could only cross the room by taking hold of the furniture. The physician who attended him for one year said that Mr. Manning had *chronic inflammation of the brain*, and recommended the application of poultices and fomentations to the head.

"After having been under the doctor's treatment for a year," says Mr. Manning, "I was no better, and he said he could do nothing more for me. I then had another doctor, who said my case was hopeless, and nothing could be done for me. Our Rector's daughter got me several bottles of medicine for consumption from London, but it did no good, and I lingered on in the same state year after year. I was in such pain that I often wished it might be God's will to take me. Several times it was reported that I was actually dying."

"In November, 1892, Mrs. Franklin, wife of the corn merchant, gave me a bottle of medicine which she hoped might do me good. It was called Seigel's Syrup. I had no faith in it, but I began taking it. In a week I felt a little better. My head was easier, I had some relish for food, and what I ate agreed with me. So I kept on with it, and gained a little every day. From that time I never looked behind me, and soon gained two stone in weight. I am now quite strong, and am back to my work. I can eat any kind of food, and am free from all pain. But for this medicine, Seigel's Syrup, I believe I should to-day be in my grave; and so great is my desire that others may know of the remedy that saved my life, I give full permission to the proprietors to publish my case if they think best to do so."

The above statement is condensed from the more extended legal one in order to save space. The other, however, will soon be published in full in another form. This is signed by Mr. Henry Delph Manning, of 3, High Street, Hilgay, near Downham, Norfolk, and has appended confirmatory statements from witnesses of high standing.

Now, we ask, was the doctor right in thinking the case to have been one of cerebral inflammation? No, clearly not, as that nearly always arises from a severe injury to the brain, and is usually fatal in a short time. The head trouble in this case was congestion of the brain, resulting from acute indigestion and dyspepsia, Mr. Manning's true and only disease. When Mother Seigel's Curative Syrup cured that, the brain and other disordered organs recovered health and tone.

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MARKET SUPPLEMENT.

SATURDAY, JUNE 26, 1897.

COFFEE.

COFFEE. London advices dated 4th June 1897 say:—Coffee continues dull, and with auctions consisting mostly of indifferent qualities, prices have further given way about 2s per cwt.; fine descriptions command previous rates. "Futures" 3d to 6d per cwt. cheaper for Santos; yesterday the quotations for Rio were as follows, viz., 34s 6d, June, and 36s for December; Santos 37s 9d for June and 38s 6d for December.

During the past week the supplies at auction have been moderate, and the selection for the most part of indifferent quality, possessing little interest for the trade. The demand has been very slow, and prices generally show a decline of 2s per cwt., exception being made in favor of the limited quantity of fine quality, for which full prices have been paid. A quiet tone has prevailed in the market for futures, and prices are rather easier, closing as follows:—

London.....Santos.....September delivery	... 38s Od.
New York ...No. 7 Rio.....	... 7.20 cents.
Hamburg Santos.....	... 38 pf.
Havre Santos.....	... 47 francs.
Holland Good ordinary Java	46½ cents.

Imports Deliveries and Stock of COFFEE in London are as follows:—

	STOCK.		IMPORTS.	
	1897.	1896.	1897.	1896.
West India..... tons	442	467	602	928
Ceylon	94	136	182	279
East India	2780	3324	4172	6130
Mocha	548	500	432	488
Brazil	2639	1470	1046	739
Other Foreign	7556	6057	13921	11320
Total tons...	14059	11954	20355	19884

	HOME CONSUMPTION.		EXPORT.	
	1897.	1896.	1897.	1896.
West India tons	166	282	349	613
Ceylon	74	207	140	253
East India	973	1337	1205	2672
Mocha.....	244	247	98	102
Brazil	606	560	1037	1214
Other Foreign	4308	3794	5147	4737
Total tons...	6371	6427	7976	9591

The preceding figures exhibit—

In the Imports an increase this year of	471 tons
Home Consumption a decrease of	56 "
Export a decrease of	1615 "
Stock an increase of	2105 "

Auctions this week have gone off as under:—

CEYLON,—Plantation.—10 casks 4 tierces 2 barrels 3 bags sold, smalls 90s., fine middling colory 108s., good colory bold 115s., peaberry 112s 6d to 121s.

EAST INDIA,—168 bags sold—Wynaad, bold, 94s; cherry dried triage 63s 6d.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (May 28, 1897) says:—A rather better tone has prevailed at Public Sales this week, and the supplies showing signs of falling off. Previous values have been well maintained.

Only 1900 bags East India were offered and all disposed of at unchanged prices, except for fine colory qualities which realised very full rates.

The smaller supplies of Central American met more competition and rather better prices were obtained.

The Term market has continued to decline and quotations make a fall of 1/- since our last.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending June 2nd, 1897, says:—Bank rate 2%. Bombay Exchange closes at 1s 2½d. Brazil Exchange 7½d. Rupee paper 3½% 62. Silver 27½d per oz.

We have no change to report in this market, which continues dull for

all kinds except fine, and occasionally lower. Auctions close to-morrow, and will be resumed on the 10th inst. Brazil markets are very dull.

Daily receipts have averaged 7,428 bags in Rio, and 4,286 bags in Santos.

Futures have been dull during the past week, and after but trifling fluctuations close quiet with quotations unchanged to 6d easier, viz.:—Good average Santos in Havre, September, delivery fcs. 46.00, in Hamburg pf. 38, and No. 7 low ordinary Rio in New York \$7.20.

To-day's London official quotations are:—

	June	July	Sept.	Dec.	March	May
Rio ...	34/6	—	35/6	36/—	—	—
SANTOS ...	37/9	37/9	38/—	38/6	39/—	39/6

We quote:—

Ceylon, mid. to good mid. 101/ @ 115/	Costa Rica, mid. to fine... 83/ @ 108/
Do. small to low mid. 88/ „ 100/	Do. ord. to low mid. ... 63/ „ 82/
East India, mid. to good mid... 91/ „ 105/	Jamaica, good to fine ord. 52/ „ 67/
Do. small to low mid. 79/ „ 90/	Do. greenish to fine colory... 74/ „ 120/
Guatemala, mid. to fine... 79/ „ 102/	African ... 32/ „ 34/
Do. good ord. to low mid... 66/ „ 78/	Columbian, ordinary ... 57/ „ 63/
Salvador, good ord. foxy greenish... 62/ „ 63/	Do. good ord. to low mid... 64/ „ 79/
	Do. mid. to fine... 80/ „ 98/

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
Rio ...	3,359,000	2,227,000	2,554,000
SANTOS ...	4,921,000	2,906,000	3,866,000
	8,280,000	5,133,000	6,420,000

Auctions:—

22 casks and tierces 7 barrels and bags Plantation

Ceylon	...	@ 84/	@ 115/
431 bags Mysore	...	77/6	107/
557 bags	76 bags Coorg	...	77/6 „ 90/
East India	21 bags Wynaad	...	67/ „ 89/
	29 bags Nelliampathy	...	76/ „ 83/
278 barrels 62 bags Jamaica, chiefly sold	...	47/ „	84/6
4,486 bags Costa Rica, good part sold	...	57/ „	98/
2,701 bags Guatemala, part sold	...	80/ „	97/6
1,364 bags Nicaragua, good part sold	...	57/6 „	63/6
379 bags Salvador bought in.			
951 bags Vera Paz, and Coban part sold	...	88/ „	102/6
170 bags Mexican part sold	...	83/6 „	96/6
2,223 bags Columbian part sold	...	55/ „	87/
10 bags Sanchez bought in.			
15 bags Grenada bought in.			
101 half-bales Mocha bought in.			
86 half-bales Abyssinian bought in.			
14 half-bales Liberian Ceylon	...	35/ „	54/
Landed last week 884 tons. Deliveries 921 tons. Stock 14,208 tons.			
Do. last year 383 „ „ 744 „ „ 12,212 „			

TEA.

Of Indian Tea the public sales were small, but consisting mostly of Calcutta-bought teas, they experienced a slow market at easier rates; the selection included a few small shipments of New Season's Tea of fair quality, which sold comparatively cheap.—Of Ceylon Tea the auctions were large, but, with good competition, prices were well maintained. The imports of Indian Tea, as usual at this season, were quite insignificant last month, whilst the deliveries were very heavy, being 1,400,000lbs. in excess of those for the same month last year; the stock, though still 5,500,000lbs. heavier than a twelvemonth ago, was reduced by 10,700,000lbs. The imports of Ceylon Tea during May were some 700,000lbs. in excess of the same month's last year, but the deliveries show a much greater expansion, being 750,000lbs. heavier than the landings, and 2,200,000 lbs. in excess of the deliveries of May last year. The stock has thus been materially reduced, but is still 1,400,000lbs. heavier than a twelvemonth ago.

SUPPLEMENT TO PLANTING OPINION.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of June 4th, 1897, says :—

QUANTITY BROUGHT TO AUCTION IN LONDON FROM 1ST JUNE TO DATE.

Indian.	Ceylon.	Java.
1897-1898...7,903 packages.	29,621 packages.	701 packages.
1896-1897...3,557 "	25,068 "	177 "
7,903 pkgs. INDIAN	Total 38,225 packages were offered in public auction this week.	
29,621 " CEYLON		
701 " JAVA		

Movements of Tea in London for the whole of the past season, as shown by the figures of the Tea Brokers Association, are given below :—

Week's av. of New Season's Tea sold on Garden Account, 1897,
301 pks., av. 8½d. 1896, 238 pks., av. 8d.

	1897.	1896.
	Pkgs. Price.	Pkgs. Price.
Assam ...	200 p 9½	20 10
Cachar and Sylhet ...	49 6	90 8
Travancore ...	52 5½	128 7½

Indian. This week's small auction consisted mainly of Calcutta bought Teas; the few New Season's Teas sold with fair spirit, the best invoice being from the Doom Dooma Co.'s "Hansura" division, which realised an average of 10½d. per lb. The Old Season's Teas sold at rather easier prices. The official telegram from Calcutta gives exports to U. K. from the 1st April to date as 3,185,000 lbs., against 2,421,000 lbs. last year.

Comparative prices of Indian Tea in London :—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor) ...	4d	5d	4½d	4d
FANNINGS. (Red to brown, strong rough liquor) ...	4d	5d	5d	4d

	1897.	1896.	1895.	1894.
BROKEN TEA. (Brownish to blackish, strong liquor) ...	6½d	7½d	7½d	5½d
PEK. SOUG. (Blackish greyish, useful liquor). 7d	8½d	8d	6½d	6½d
PEKOE. (Greyish to blackish, some tip, useful liquor) ...	8½d	9½d	8½d	9d
PEK. SOUG. (Blackish greyish, inferior liquor). 5½d	6d	6½d	5½d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor) ...	6½d	7d	7d	6½d

Ceylon. The auctions passed with good spirit at prices fully up to last week's rates, the higher grades of good liquoring Teas ruling, if anything, slightly dearer. The official wire gives exports from Colombo to U. K. for May as 9,500,000 lbs. and estimates the quantity for June as 10½ to 10¾ million lbs. Export to U. K. from 1st January to end of May was 43,000,000 lbs., against nearly 42,000,000 lbs. to same date last year. Average for week 7½d. against rather over 7½d. last year.

Ceylon Tea sold on Garden Account 1st Jan. to date 1897, 463,109 pkgs. av. 7½d. 1896, 414,187 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London :—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor) ...	6½d	6½d	7½d	5½d
PEKOE (Ordinary leaf, little twist; fair liquor) ...	7d	7½d	8½d	7d
PEKOE SOUG. (Rather bold leaf; indifferent liquor) ...	5d	5½d	6½d	4½d
PEKOE (Somewhat bold leaf; indifferent liquor) ...	5½d	6d	7½d	5d

Java. The 701 pkgs. sold with good spirit, but without change in quotations.

Bank rate 2 per cent. Exchange on London three months sight.—Calcutta 1/2¾ Colombo 1/2¾.

PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 5½d.) May 28th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry ...	217 p	7												
New Hope ...	141	7½	25	8½	...	...	23	8½	54	7	28	5½	11	5½
Pykara Falls ...	76 p	6½	...	...	24½c	7½	36½	6½	16	6	...	...	...	...
South Wynaad ...														
Kanambyle & Che...	69 p	7½	40½ c	9 10½	13	6½	...	...	7	5½	5	4½	8½c	4½
Travancore ...	710 p	6½												
Arienkow ...	10	4	...	...	3	5	1	6½	1	4½	5	2½	...	...
BA ...	24	4	...	...	11	4½	...	...	...	...	11	2½ 4	2	3
Bonaccord ...	120 p	6½	46 p	7 7½	43	6½	...	...	26	5½	...	...	5	3½
Great Valley ...	96½ c	5½	...	...	53½c	5½	34½c	6½	...	...	6½c	3½	3½c	2½
H ...	30	4	...	...	14	4½	...	...	...	...	16	4	...	...
Merchiston ...	150 p	6	58½ c	7½	52	6½	...	...	25	5½	11	5	4	3½
P ...	22 p	4½	...	...	...	...	...	...	...	...	19	4 4½	3½c	2½
Poonmudi ...	135 p	6½	39 p	4½ 7½	63	6½	...	...	29	5½	...	...	4½c	3½
Sth Travancore TCV	123	7½	39	8½	41	7	43	6½	...	...	...	...	...	...

(AVERAGE FOR ALL INDIA 5½d.) June 4th.

Neilgherry	40 p	4½					20½c	5½	20	4½				
JTMK														
Travancore														
Riviera	52 p	5½			35	4½	11	6½					6½c	3

Teas marked thus † are New Seasons.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOOR, SATURDAY, JULY 3, 1897.

[No. 14.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; and Quarterly, Five Rupees, including postage.

ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

MANAGER’S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 9th July 1897.

Kadur. MUDIGERE, 30th June.—*Weather.*—A very nice break on for the last six days which is making things grow splendidly. *General Health.*—Very bad all round. Every estate has any amount of fever amongst coolies just now. Crop of jack fruit plentiful. *Labour.*—Ample for all requirements. Maistries and contractors going about the country looking for work. The rain on nights of 21st and 22nd prevented men here attending the Durbar in Mudigere. The prospectus for the Kadur Sky Meeting is advertised for September 14th and 16th, and it is to be hoped that the weather will be pukka Queen’s weather this time.

Nilgiris. KOTAGIRI, 30th June.—24.26 inches for the half year, 6.40 inches of which due to strong monsoon in June; this is the heaviest fall on record for the half year. The rain was too early and too copious, with 4.72 inches in February, followed by 3.46 inches in March, 4.83 inches in April and 4.68 inches in May. Estates that had not cropped last year responded to the early rain by a good show of blossom at the end of February, also estates that got through their pruning early in the season, but generally speaking it may be accepted that rain has been too constant, too heavy and too early, notably on estates under systematic shade, for the flower; and short crops have to be faced by many this year on this side. Blossom has been blown all along since February in a most

meagre and disappointing way with never a good spell of dry weather in between to force out the spike with a good burst; one of the best shows this side has just appeared at the end of June and will make all the difference on many places. Prospects, therefore, more hopeful. Berries swelling fast in all stages, promising a most accommodating crop to gather in. Labour plentiful.

KILKOTAGIRI, 28th June.—Since Monday the weather has changed and we are having very hot sun all day; weeding seems to be the general occupation now. *Planting*.—Some are still planting, but most stopped with the change in weather; several estates have put out a good many—one, I hear, 20,000 plants. *Handling* is going on. *Labour* is coming up but slowly, and most estates are short-handed but expect more coolies up every day. *Grain* about 19 measures (ragi) per rupee.

GENERAL NOTES AND ARTICLES.

"Famine" Coolies!

We publish elsewhere a communication of a somewhat extraordinary character from a well-known correspondent, Mr. B. Nelson. The facts of the case are simple and are susceptible of easy proof, and we hope the matter will be taken up in earnest by the U. P. A. It throws perhaps some light on the recent decision of the Kanan Devans P. A. to refuse to contribute towards the Famine Fund.

Jadoo.

The inventor of this patent manure, Col. Halford Thompson, has written us a long letter (which also appeared in the *Madras Mail*) in answer to "Toda's" criticism. This latter gentleman has replied to the above letter in the *Mail*, but as neither of the communications throws any fresh light whatever on the controversy, we have decided not to publish them, and unless fresh matter is brought in, *i.e.*, authenticated details of actual experiments, see no use in devoting further space to the subject.

Intensive planting in excelsis.

We have always advocated the practice of intensive rather than extensive planting, but it is difficult to read without a smile of the very biggest planter in Bermuda having only twenty-five acres all told. The crop he indulges in is early ground fruit, flowers and vegetables with the surprising result of about £40 clear profit per acre annually. The whole island is only 10,000 acres in extent, and the average holding is but five acres or so. Sometimes as much as £100 per acre are made.

The Giant Nettle.

Mr. Gleeson, Superintendent of the Gardens of the Madras Agricultural Society, writes us: "I have heard of a Giant Nettle—probably read about it in your paper—which grows somewhere among the Hills of S. India. Now I have been trying to get some seed of that indential nettle for a long time, but cannot succeed in obtaining it. Will you, with your wide circle of planter readers, try to help me? I hope I shall be able to return the compliment some day."

Will some of our readers, especially those correspondents who conducted such an animated discussion in this journal last year, kindly help us in the matter?

Para rubber.

Some interesting experiments, which will be continued over several years, are being made in the Royal Botanical Gardens of

Ceylon, on the best methods of tapping and cultivating, with the cost thereof, Para rubber trees (*Hevea brasiliensis*). There are some 3½ acres of this tree at Heneratgoda, from which many thousands of seed and plants have been distributed in the East. The total average annual yield in Ceylon varies from one and a half to two pounds per tree. An acre containing 50 trees, the value of the produce at London prices is £13. The cost of labour is slight, but it must be remembered that for ten to fifteen years, the yield is *nil*. So that except in low swampy lands where nothing else can be profitably grown, Para rubber will never pay. There are other varieties of course which stand a much better chance of success.

Amsterdam cinchona sales.

"Our Amsterdam correspondent wires on Thursday," says the last number of the *Chemist and Druggist*, "that at the auctions of Java cinchona-bark held there that day 3,301 packages sold at an average unit of 4·20c. per half-kilo., being equal to a further advance of 2½ per cent. on the May auctions, the equivalent of the unit in English money being about 7d. per lb. The English and American manufacturers bought the equivalent of 7,257 kilos. of quinine; the Brunswick factory, 2,086 kilos.; the Mannheim and Amsterdam works, 1,067 kilos.; Frankfort-on-Maine and Stuttgart, 1,846; Auerbach, 1,508; and various buyers, 2,813 kilos. of sulphate of quinine. The prices paid at the auctions ran from 14½c. to 37½c. (equal to 2½d. to 6½d. per-lb.) for *Manufacturing* barks, and from 9c. to 80¼c. (equal to 1½d. to 1s. 2½d.) per lb. for *Druggists'* barks. The market was very quiet."

Essential Oils.

Planters interested in the distilling of essential oils will note the following extract from the *Chemist and Druggist*:—

Oil of limes is becoming scarcer every week. For distilled oil 5s. 6d. per lb. is said to have been paid, and at present holders already talk of 6s. or 6s. 6d. For expressed oil almost the same quotations (6s. 6d. per lb.) is made. The new crop is not due in the ordinary course of business until September, and it is thought that before that time much higher prices will be seen. The new crop of *Neroli* oil, which is now being distilled, is said to have yielded satisfactory results, but the prices have not been definitely established. Our quotations vary from 5s. 6d. to 7s. 3d. per oz. for *Petale*. At auction two bottles containing each 1 kilo. of *Chiris'* oil of neroli petale, of 1895 crop, were offered, but no bids were made for them, and they were bought in at the nominal figure of 10s. per oz. Of *Cuscus* oil 40 bottles, each containing about 9 to 10 oz., were offered, but no bid, was made for these. *Cassia* oil is neglected and dull of sale; 10 cases were catalogued for auction, but not actually offered, as they were not landed in time. Two cases *Star-anise* oil sold cheaply at auction at 6s. 6d. per lb., which is below current market prices. Of *Eucalyptus* oil very little was offered to-day. Six cases *Portuguese Globulus* oil, shown before, were still limited at 2s. per lb., at which they cannot find buyers. Five cases Fisher's oil of *Nutmeg* were bought in at 5d. per oz. *Lemongrass* oil steady at from 2½d. to 2½d. on the spot. It is said that about 200 cases, shipment during present year, have been sold on arrival at 2½d. per oz., c.i.f. terms. *Citronella* oil is quoted at 1s. 2d. to 1s. 2½d. per lb. on the spot, for tins, and 11½d. to 1s. per lb., c.i.f. terms. *American sassafras* oil is quoted somewhat lower at 1s. 9d. per lb.

Denaturalized agricultural salt.

The attempts both in India and Ceylon to denaturalize salt, so as to enable it to be used free of duty for agricultural purposes, have been many but unsuccessful. We learn however that in Prussia, where a state monopoly with regard to salt exists, as in India, that the question has

been solved by means of using pulverized wormwood for the purpose. The following letter to the Hon. P. Coomaraswamy from a German gentleman named Mr. Fr. Lange was published in the *Ceylon Times*:—

BERLIN W., Feb. 22nd, 1897.

The Hon. P. Coomaraswamy, London.

DEAR SIR,—According to your wish I append an abstract of the German law *re* inland revenue on salt, dated the 12th December 1867:—§2. The inland revenue on salt is 6 marks for 50 kgr. (about 112 lb. a hundred-weight), §20. Free of tax are the following:—

No. 2 the salt used for agricultural purposes, *i.e.*, for the feeding of cattle and for manuring.

No. 3 for pickling herrings and similar fish.

No. 4 the salt employed for all other industrial purposes with the exception of that for industries preparing nourishment and relish for men (*vide* No. 3 exception).

The salt for purposes (*vide* No. 2 and No. 4) must be denaturalized according to article 5 of the agreement of 8th May 1867. This shall be accomplished by means of pulverised wormwood (enactment of the 25th March 1878). I shall be glad to give you any more information, if wanted, and remain, dear sir, yours faithfully,

FR. LANGE.

We trust that our United Association will take this matter up and press upon Government the advisability of introducing the Prussian method of denaturalizing salt for manurial and commercial purposes. For though salt may in itself be incapable of serving as a direct plant food, yet as a solvent and mechanical agent, its value is undoubted. Inland cocoanut plantations especially would benefit by the change, and in addressing Government, due stress should be laid upon the benefits to be derived alike by ryots and planters.

Planters and marriage. As a class, planters labour under the odium of being less partial to marriage than most other classes in India. It was alleged some time back in home papers, that the superintendents of estates in Upper India were directly forbidden to marry by their Managing Directors, on pain of instant dismissal. This was denied hotly by the planting organs of the districts concerned. Judge of our surprise, therefore, when in the *Indian Planters' Gazette* of the 19th inst., we see prominence given to the following in an article entitled "Should Assistants Marry?" :—

"Cases have cropped up lately of Assistants, possessed of from five to ten years' tea experience, with salaries ranging from Rs.250 to Rs.400 a month, being flatly told if they marry they must go."

Such a statement in a responsible paper like our contemporary carries a weight that is indisputable. If the allegation is true, it is time indeed that the great B. P. should arise and twist the tails of the offending Directors. It is intolerable that such tyranny should be exercised on Assistants by their "bosses." Their reasons for such behaviour are vicious and unsound, false alike in morality and hard common sense. As the correspondent above quoted remarks:—

"Here we have a number of men who by steady industry have achieved a fair degree of success in their profession—a hard and dreary one enough in all conscience—a privilege refused to no one similarly placed in other walks of life is calmly denied them, and their natural wish to create a home for themselves is flouted as preposterous. Is it hoped that an Assistant by remaining single will make better tea, manage labour better, or lead a more moral, steady, or industrious life? Ah, that question of morals! It ill befits any one to cast a stone, but recent action upon the part of tea authorities would seem to place a premium upon immorality, or, at any rate, to evidence an utter disregard for what becomes of their Assistants—the toiling producers of many a fat dividend. Who can blame the Assistant if, disappointed in his natural hopes, he turns to the kept woman for comfort, or who can wonder if, in consequence, he sinks a

bit in the scale and measures his work and his responsibility by his own standard of life. Certainly not his Burra Sahibs, for they have driven him thither. * * * * Touching the management of labour, any one who knows aught of the subject knows full well that the Manager or Assistant who fails to keep himself aloof, in a moral sense, from the native loses therewith a portion of that divinity which should hedge in a planter, if he is to become a successful manager of labour."

Roads on the Nilgiris. Taking the district as a whole, the Nilgiris are very well off for roads, and it is only in the more newly opened parts that complaints are made. One of these young sub-districts, Kil-Kotagiri, has been opened up, though, to such an extent that its claims for being served with efficient means of communication are undeniable. There are, we are informed, already 20 large coffee estates in the district, owned by Europeans and natives, besides hundreds of small native holdings. There are also a number of Badaga and Irula villages, whose only communication with the plains is by means of pack-bullocks, hundreds of which come up the ghat every week. The expenditure on the estates, a great portion of which naturally is distributed among the local labour, is estimated to be at least 15,000 rupees per month, and often more. The small holdings and the hundreds of acres of grain cultivation are not included. These large estates and numerous holdings furnish of course a very large traffic with the plains, but at present there is not a single bandy-road within seven miles of the centre of the district. The only substitutes are bridle-paths, and these, we learn, are very badly kept up near the estates. A short time ago the local planters petitioned Government for increased facilities in communications, but, no answer being favoured the applicants, they have had for the present to make the best of a bad job, and worry along with what roads they have. What is most required at present is a short road some ten miles in length, from the signpost on the Kodanaad Road to the Nilgiri Boundary. Thence the Coimbatore authorities should help with about five miles of ghat to join the road from Kotagiri to the Kotagiri-Mettapollum ghat, within about 1½ miles from the latter town.

The road asked for is certainly but a very small affair, and it is undoubted but that new clearings would be still more eagerly made than at present; were the cost of transport but lessened in the manner indicated. The funds required would not be great, and it would be possible to obtain sufficient funds for the annual expenses for keeping-up and repair by means of tolls, and perhaps something over. The P. W. D., in its wisdom, classes roads and communications as non-productive works. The Government, as a whole, sees things more truly, we hope; as it undoubtedly benefits directly from the increased value of the lands tapped by new arteries for traffic.

U. P. A. S. I. LEAVES.

(GATHERED BY THE SECRETARY, U. P. A. S. I.)

THE dates of the Annual Events are now definitely fixed.

The Planters' Dinner will be given at the Bangalore United Service Club on the evening of Friday, the 6th August. Any gentleman who wishes to be present will kindly give

early intimation, so that the Club Executive may be notified in good time how many "plates" they are to lay.

On the following day a meeting of the Committee will take place at the Cubbon Rooms, when the order of business for the Annual Meeting will be considered and arranged, so that the proceedings of that meeting may be as expeditious as possible.

The Annual Meeting will open at the Cubbon Rooms at 11 o'clock on Monday, 9th August. A preliminary Agenda paper has been circulated, and it is hoped that all recommendations as to additions, omissions, &c., will be sent in soon, so that a *puckha* Agenda paper may be drawn up and circulated by the middle of this month.

The chief subjects for discussion are (1) The report of the Enquiry Committee; (2) the methods of raising and employing U. P. A. S. I. funds. Mention of minor matters is reserved until the list has been revised by the Secretaries of the various District Planting Associations.

The meeting will take place during the Race week at Bangalore, when many planters, besides delegates from District Associations, will be at that place. Opportunity is now taken to remind *all* planters that they will be very welcome. Last year there was a good number of 'visitors' present, and if their attendance is doubled or trebled this year, so much the better. The more interest that planters openly manifest in the progress of the Association and the common weal of the planting community, the more likely is the Association to succeed in the work it has undertaken. A cordial invitation is therefore issued to all. It can hardly be addressed to each planter individually, so the Secretary ventures to send it round in this somewhat informal way.

GERMAN EAST AFRICA.

(Continued.)

Yes, its a lovely country. The coast line has a green beauty of its own. The water is like crystal, and you see fathoms down to the coral and anemones and sea-plants on the bottom.

The headlands are dotted with cocoanuts and large shola trees, and the bays are encircled with mangrove that look lovely at a short distance and quaint near to. Once you start up-country, five miles takes you past all cultivation and into a rolling park land, very dry at times, but in the monsoon wet enough in all conscience. The foot hills have all been cultivated and are so still in patches, and round the topes of coconut trees that always mark a village of beehive huts are fields of maize, rice, potatoes, beans, etc. Turn it with a hoe, and it laughs with a harvest.

The hills are densely clothed in heavy jungle so dark that in many places the sun hardly penetrates at midday, and the trees are hoary giants standing often enough 200 feet in height, 100 feet and more to the first branch; up above is quite a world of greenery with flowers and orchids, birds and butterflies that never descend to the earth at all. The jungles are singularly still as a rule till nightfall, when everything wakes up. As evening approaches, you will hear the hornbills laughing like so many maniacs and the pigeons cooing; then the bark of the small antelope

comes up from the hollow and the chirruping of birds as they settle down for the night. Later on comes the call of the owls and the whirring hum of the nightjars and the countless beetles, and still later you may hear the grunt of a pig and the whining snort of the leopards, and the weird call of the night monkey. It is a lovely country and lonely and a feverish. But some day it will be a great planting centre. Coffee does well but for leaf disease. Tea should grow well and of good *jât*. The foot hills are admirably adapted to cocoa and Liberian coffee. Cotton does well on the coast and tobacco in the dryer parkland. The only difficulty is labour, which is dear and so far bad.

But I would caution those going there against the black water fever of the country: it is deadly; but till you begin clearing does not attack one badly.

A railway now passes the foot of the hills and should be of great service to the Usambara planters. If I went there again I should go to Fuga above Kologur; it is a bit higher than Usambara and has not so much frost, but it is further from the sea about 90 miles. Nothing by rail, but a lot to walk, when potters won't do more than 15 miles a day.

The officials are very good, but some of the non-officials are awful, the scum of Germany. As a rule there are exceptions—dear old Van Horn was one, and Titus Schütz another, and the owl Fritz Moritz another.

Some of the timber is first rate and would be priceless at home.

The English Mission people are doing a lot of good working like slaves and all for nothing; they are heroes in the best sense of the word.

I'd like to go back to look them all up, but it's unlikely that I shall ever get there again. *Labour*.—Local untrained labour is Rs.8—10 a month for a man, Rs.6—8 for a woman; rough carpenters get Rs.1—2 a day, but rates are all on the down grade, and with roads and railways should be fairly cheap in time. The niggers are merry, lazy lot, but can work well, and now "qua hère" Africa.

WANDERER.

THE S. I. PLANTERS' ENQUIRY COMMITTEE.

OUR contemporary the *Madras Mail* has not been very long in reviewing the lengthy report of the South of India Planters' Enquiry Committee. More fortunate than its rivals, it has been able to draw aside the veil of "confidence," and give its readers an idea what the report says. We publish its articles on the subject hereunder, in the hope that planters will take the matter up and discuss it in its many bearings. A great deal will depend upon the character of the "remarks" that are to be submitted to the U. P. A. S. I., and as that body is the representative of the District Planting Associations and these, in turn, protect the interests of individual planters, the opinions of these gentlemen will no doubt be very welcome to the fellows. It must be remembered that the Government of India has preconceived prejudices against the advance system, against penal labour laws, and against Extremism. Planters will need all their new-born unity of purpose if they are to induce the Government of India to legislate in conformity with their wishes; and even if that should happen to endorse the views of the Enquiry Co-

mittee at every point, there would still probably remain much to be done before "Victory" could be recorded.

The following are the articles that have appeared in the *Madras Mail*:—

I.

Before touching upon the chief points of the comprehensive Report sent in to the Government of India by the South of India Planters' Enquiry Committee, it will be as well to remind our readers of the circumstances under which that Committee was appointed, and the scope of the enquiry it was directed to make. It was the outcome of a Memorial presented to H. E. the Viceroy during his tour in this Presidency in 1895. In that Memorial the U. P. A. S. I. asked in particular for increased protection against "loss from wilful breach of contract and dishonesty with regard to advances" made to coolies and maistries. Proposals previously put forward with this object had been rejected by the Government of India, but the U. P. A. S. I. suggested that the conditions of labour in Southern India has not been sufficiently known or explained to that Government, and that the appointment of a Committee to enquire into the matter might lead to a clearer understanding of planters' difficulties. His Excellency the Viceroy replied in such a manner as to show that he was inclined to look with disfavour on legislation of the kind that the memorialists appeared to wish for. He reminded them that the origin of most of their difficulties lay in a system of advances, as to the necessity for and desirability of which they themselves were, he said, by no means agreed. However, His Excellency decided that such an enquiry as that desired should be made, and in due course Mr. (now Sir) W. Mackworth Young, Resident in Mysore and Chief Commissioner of Coorg, was nominated by the Government of India as President, Mr. J. W. F. Dumergue, L.C.S., by the Madras Government as its representative, and Mr. J. Williams Hockin, of Vayitri, South Wynaad, by the U. P. A. S. I. It was directed that the Committee's enquiries should extend to Coimbatore, Nilgiris, Madura, Malabar, Salem, Tinnevely and Coorg, and the Committee was further requested to consider whether, in order to render the enquiry complete, it should not also invite evidence from Mysore, Travancore and Cochin.

"The enquiry was to cover the following ground:—1. As regards the system of advances to garden coolies and maistries—(a) the nature of the system as at present worked; (b) the necessity for its continuance; (c) the difficulties experienced in its operation; and (d) the best methods of removing them. 2. As regards the prevention of coffee stealing—(e) whether the conditions under which coffee is produced and brought to market are such as to render it desirable (1) to extend to "parchment" and "cherry-dried" coffee the legislative provisions now applying by Section 9 of Madras Act VII. of 1878 to "green-gathered" coffee; and (2) to amend that Section by substituting the word "person" for the words "cooly, maistry or other labourer employed on a coffee estate." In response to suggestions made by the Madras Government, the Government of India stated that it intended that the question of reciprocity in the execution of processes should be discussed under sub-head (d) but that it could not agree to any consideration of a proposal that breaches of contract which fall under Act XIII. of 1859 should be made extraditable offences under Section 11 of Act XXI. of 1879, or that the procedure for extradition under Section 14 of the same Act, viz., the case of offences not ordinarily extraditable, should be simplified.

This gives a general idea of what the Committee had to enquire into. The course taken was to frame a series of questions to be answered by Planters' Associations and individual planters; and beyond this, oral evidence was taken, and 49 witnesses were examined. The Committee explain that they "laid their foundations wide" when framing the questions referred to; and they express the belief that every member of the several Planters' Associations who wished to bring forward his personal views had an opportunity of doing so. Referring to the fact that not many maistries were brought forward for examination, they remark:—"We are not disposed to think that the investigation has been less complete because the setting forth their whole case has devolved on the planters themselves;" and they also express themselves as, upon the whole, satisfied with the evidence they were able to collect. The enquiry being so far-reaching and the Committee so well satisfied that the evidence was reliable, the conclusions arrived at must carry weight. Planters will be glad, therefore, to know that the Committee have expressed the opinion that "the system of advances is at once the backbone of

the planting industry and the cause of the principal difficulties attending it." They will note with special interest also a remark that "altogether it appears to us that, notwithstanding the increase in the population of Southern India since the famine of 1876-77, the demand for labour is in excess of the supply, and that the disproportion is likely to grow greater, not to diminish." The Committee consider that maistries are indispensable. They comment on "the chronic impecuniosity of the cooly." Alluding to the consensus of opinion among planters as the necessity of advances, they point out that it should be recognised that in holding to this opinion planters have every inducement, from a pecuniary point of view, to desire the change which they feel to be impracticable. "No one would give advances if he could get the labour he required without them." Finally, the Committee record their finding, anent advances, viz., "that however much planters would be benefited by the abolition of the advance system, its abolition is impossible under existing circumstances, and that this method of meeting the planters' difficulties cannot be regarded as practicable." "On this subject," they say, "we find that there is a practical consensus of opinion among the planters themselves and that his opinion is corroborated by the testimony of the employers of labour." In another place it is observed, "there is nothing on record before us to controvert the evidence which has now been accumulated, that advances are absolutely necessary for imported labour."

We need not touch here upon the subjects of coffee-stealing or on the means by which the Committee arrived at the general conclusions that are stated in the Report. Before closing our present remarks, however, we must show how thoroughly the Committee have grasped the actual position as regards the system of advances, and the protection that planters wish to obtain. They realise that what planters want is the enforcement of the contract rather than the punishment of the offender. The civil courts, it is remarked, do not afford the remedy; Act XIII. of 1859 does not adequately meet the planters' case. Not only is the language of the Act vague, but "it does not enforce the ultimate performance of the contract," and "it does not protect the planter against the enticement of his labour by other persons." Moreover, "it never was intended to be applied to contracts for agricultural labour, still less to cooly emigration." Yet this Act, with all its faults, "has remained on the statute book as the sole, though imperfect, sanction in Southern India of estate labour contracts." It has been "a useful handmaid" to the planting industry, but the Committee state very plainly that much more is necessary, and on almost every point of importance they concur with the opinions that have been repeatedly expressed by leading men among the planting communities in various parts of Southern India.

His Excellency the Viceroy referred in 1895 to general or abstract objections to legislation such as the planters wished to see introduced. As the planters have argued, so the Committee argue: special circumstances call for special courses of action. They hold that the system of advances is necessary, and the rights of property cannot be efficiently protected unless their advances are secured by special enactment. They remark that the want of proper facilities for enforcing labour contracts has resulted in an extensive practice of fraud, which is demoralising the class furnishing the labour. There is ample justification, they think, for the view that the Southern India planting industry needs the protection of a penal labour law; they consider that the time has not yet come when legislation controlling the relations between employers of labour and labourers, giving adequate protection to the employers against fraud and wilful breaches of contract amounting to fraud, and at the same time safe-guarding labourers against oppression, can be dispensed with; and they "venture to think that the time when special legislation on labour contracts can be abandoned will be indefinitely postponed in Southern India unless the necessary measures are now taken by the Government." Comment on the measures suggested must be reserved. They were briefly specified in our issue of the 21st instant, and we have now shown the main points of the line of argument that led up to them. Whatever may be said of the recommendations themselves, planters cannot but appreciate the judicial and yet sympathetic manner in which their case has been stated, and their contentions confirmed, in the Report of the South of India Planters' Enquiry Committee.

II.

In a recent issue we commented on the findings of the South of India Planters' Enquiry Committee, and showed how the Report submitted to Government corroborated the representations of planters themselves in respect to the chief points under consideration. The attempt of the planters to "educate" the Government of India has

so far succeeded that conviction has been carried to the minds of the Committee, and the Committee themselves have put before the Government of India "instruction" of the very kind that planters approve. It remains to be considered, however, whether the remedies suggested will meet with the same approval from planters as they certainly must accord to the Committee's diagnosis of their case. These remedies have been already briefly stated in our columns, but it is necessary that they should be referred to again, and that light should be thrown on the course of argument that the Committee put forward to justify them. It is also necessary to point out that the recommendations submitted do not accurately exhibit what the Committee would suggest as the *best* course of action, for the scope of their deliberations was restricted by certain stipulations made by the Government of India with reference to the vexed question of extradition. A word or two will show the bearing of this restriction. The Committee remark with reference to the grievances of the planter in Native States, who "except in so far as he is able to obtain local labour (a small proportion of his total supply,) has no labour law at all," that the simple and obvious remedy "is to allow complete reciprocity in the service and execution of warrants under Act XIII. of 1859 between British Territory and the three Native States concerned under such safeguards as may be deemed necessary." "But," they continue, "we are precluded under the terms of our instructions from recommending that breaches of contract under Act XIII. of 1859, or rather disobedience to an order under Section 3 of that Act, should be made an extraditable offence under Act XXI. of 1879." As a consequence, the Committee dismiss the question of Reciprocity because, in the partial form in which alone they are permitted to consider it, they hold that discussion would not lead to any result.

The recommendations made are intended to meet the following difficulties:—(1) The inability of the planter in any planting district in Southern India to obtain effectual redress for fraudulent breach of contract on the part of maistries and coolies under the existing system, and to guard himself against serious loss; (2) the special disability under which the planting interest in the Native States labours, in the absence of any provision for pursuing defaulting maistries and coolies into British India; and (3) the increasing demoralisation of British Indian maistries and coolies employed in Native States. This last difficulty need not be noticed here beyond a remark that the way in which it is stated points to a belief that unless a remedy is applied existing difficulties will not merely continue but increase. As regards the first difficulty, the Committee, in seeking a remedy, remark that it is not to be found in existing legislation. "Act V. of 1866 cannot be utilised in regard to the labour employed on plantations within the Madras Presidency, and its rigid enforcement, as regards the labour employed in Coorg and the Native States of Mysore, Travancore and Cochin could only result in disaster to the planting interest in these tracts, unless it were also made applicable to the labour employed in the Madras Presidency itself and to the labour exported from the Madras Presidency to Ceylon, the planting interest in which enters into competition with the tracts mentioned." Section 492 of the I. P. C. also constitutes an inadequate remedy, because it provides no means of enforcing the contract, and planters attach much more importance to this than to punitive provisions. The Civil Courts do not, in the opinion of the Committee, afford the remedy, nor does Act XIII. of 1859. Reviewing all these points, the Committee, instead of recommending amendments of the latter Act, fall back upon Act V. of 1866, which is at present a dead letter. One point in which this Act fails is that it does not apply alike to labour imported from British territory into Native States and labour imported from Native States into British territory. Probably no single Act could do this, but the Committee obviously aim at an agreement among the different Governments concerned that shall provide for a general application of a modified and amended Act, based on Act V. of 1866. With this view they go the length of recommending a Treaty or Convention between the British Government and the three Native States in regard to reciprocity of procedure. This would avoid interference with the Extradition Act; but it is to be feared that, as the suggestion is opposed to the general policy of the Government of India, and as no precedent can be cited, the proposal regarding a Convention will not be entertained. Foreseeing this, the Committee suggest as an alternative in default of a Convention: (a) that British Magistrates should be empowered to give effect to orders of certain Magistrates in Native States in respect of fraudulent breaches of contract under the amended law, or if there is no

amendment under Act XIII of 1859; or, preferably, (b) that Magistrates in British India and the Native States of Mysore, Travancore and Cochin should be empowered by their respective Governments to deal with persons found within their jurisdiction who commit fraudulent breach of contract, as explained in (a), across the border. This follows upon recommendations that Act V. of 1866 should be amended so as to provide a suitable labour law for all the planting districts in Southern India, and that the Native States of Mysore, Travancore and Cochin should be invited to adopt the amended law. The proposed Convention would probably suit the interests of planters still better; but, failing this, the alternative suggestions are likely to be generally approved as offering a decided improvement upon the present system. Suggestion (b) aims at the introduction of a system involving "substantial reciprocity." No doubt, its application would have to be carefully fenced in, so as to guard against abuses. British Administrations are jealous of giving authority, or even a semblance of authority, within British boundaries to the judicial officers of Native States. The scheme suggested would have to be elaborated with great caution, and for its successful application other changes in the existing laws would probably be necessary beyond the introduction of such a "suitable labour law" as that proposed by the Committee. Planters certainly need either Extradition or some sound substitute for Extradition. Without either they, especially those nearest to the frontiers that divide one jurisdiction from another, are at the mercy of the migrating maistry or cooly. Planters will probably have a good deal to say on this point, and they may possibly be disposed to cling to Act XIII. of 1859, to which they have hitherto been in the habit of looking for some small measure of protection.

Reviewing the Report of the Committee broadly, we are of opinion that it explains the position in a manner that should meet with very high approval from all parties, and that if it does not recommend a course that will fully satisfy planters—whose interests, by the way, are not in all cases identical—it at least suggests very important measures on their behalf, measures that would be so valuable to them that we hesitate to believe that the Government of India will agree to what has been put forward by the Committee, even if they should receive unqualified support at the hands of the U. P. A. S. I. Whatever may come about in this respect, we cannot close our remarks on the Report without commenting in very high terms on the thoroughness, precision, impartiality and independence with which it handles a subject beset with very great difficulties and many intricacies.

LETTERS TO THE EDITOR.

A PLAIN TALE FROM THE HILLS.

"Aux nouvelles que J'apporte
Vos beaux yeux vont pleurer."

French Ballad.

SIR,—The story I have to tell of how planters in Native States can be robbed with impunity can hardly be expected to equal interest one of Rudyard Kipling's "Tales from the Hills," but however lacking it may be in interest, it has at least the merit of undisputed veracity, and the "denouement" is certainly as sensational as any lovers of romance could wish. As Mr. Ewart attempted to procure labour from the Bellary district has already been noticed in the Madras papers, it is as well that an exact account of what has happened should be placed before the public, to prevent similar attempts being made by other planters, and in the hope that such arrant swindling will be brought within the meshes of the law by the exposure of such cases. Mr. Ewart being in want of labour for the Isfield estate decided in the early months of the year to endeavour to recruit it from the famine district in Madras Presidency, selecting Adoni as a place where he was well known to the people. As a result, some coolies accepted his terms and proceeded by train at his expense as far as Koilpati, where they were detained with a view to marching them to the estate. Arrived at Koilpati they flatly refused to proceed, and as a result of Mr. Ewart's personal endeavours to persuade them, about a dozen came to work. Again

the others he had no remedy, being a planter from a Native State and therefore an *outlaw* in British territory. As one who saw the coolies, it may not be out of place to put on record that although they came from a famine district they bore not the slightest trace of famine, being in considerably better condition than the ordinary inhabitants of this country. I used to be under the impression, now I know a wrong one, that people who suffered from famine would be likely to appreciate plenty of food, but these coolies had apparently been so well fed that food was of less importance than washing it down, which they did so successfully that they all got drunk on their rice money. I will here leave these coolies on the estate and return to those that refused to move from Koilpati, as strangers in a strange land. Your readers may be wondering how they got on. As they refused to work on the hills in the hopes of recovering the outlay, they were offered work at the cotton mill at Madura, to which place they went in a body.

This they also refused, showing they had no wish to earn an honest living, and as I don't suppose they had inherited a double dose of original sin, how completely they had become demoralised by indiscriminate charity. Some took an advance to go to Devicolum, and have since bolted. A lot of them were offered work at Madura Station on the ordinary monthly pay; this was also declined. I am afraid that your readers will think I am beginning to get off the track a bit, and bearing in mind the Biblical maxim of "he that will not work neither shall he eat" will be wondering how these got on and how they could escape the common lot of either working or starving. If your readers ever thought that, they are reckoning without taking into account the paternal Government that takes care of such lazy loafers. The Government paid their expenses back to Adoni, amounting to not far from Rs.10 each. I know this will be deemed incredible, and everybody will immediately say that it is impossible: that the Government have no money for such a purpose. Their expenses were paid, so I am informed, out of the FAMINE FUND. I should doubt whether any contributor to the fund ever supposed that it would be used for such a purpose. To pay the expenses of a lot of people who have admittedly obtained money under false pretences, and if Mr. Ewart resided in British India instead of being an outlaw, would have been prosecuted criminally, seems to me an operation that might perhaps be expected from a Criminals Aid Society, but hardly from a Famine Fund. I invite H. E. the Governor's attention to this and trust he will decide whether the Famine Fund is intended to be devoted to such a purpose; for assuredly if the Famine Fund is capable of such elasticity of application, it would be advisable to drop the word Famine as a misnomer, and adopt some other title less calculated to mislead subscribers.

The immediate result of this extraordinary application of the Famine Fund was to induce the few coolies at work to desert in a body, relying on their criminal dishonesty being similarly subsidised. I have, I think, now very creditably redeemed my promise of a sensational finish to my "Plain Tale" in a way that in a work of fiction would be deemed incredible; but it is only another example of the truth of the old adage, that "truth is stranger than fiction."

It may not be out of place here to warn the Nilgiri P. A., who I see were advertising for labour from the Famine districts in the Madras Presidency, that the coolies have no intention of taking to estate work as a livelihood; their sole idea is to make a convenience of the estates up till about October and then good bye, if they didn't bolt before; and for this great condescension on their part they expect the estates to pay their expenses both ways. I mention this, as most probably the Nilgiri planters have the same crude ideas about famine coolies that we had down here. Whether it will be considered worth while endeavouring to recruit labour after these revelations I know not, but my advice would be that they had "rather bear those ills they have

than fly to others that they know not of." Of course they are not in the same position as Native State planters; but bearing in mind the coolies' great inclination for bolting and their dislike for honest work, and leaving alone the peculiar assistance they may receive from the Famine Fund, I fancy they will agree with me in thinking that "*Le jeu ne vaut pas la chandelle.*"

Yours faithfully,

B. NELSON.

ARIENKOW, SHENCOTTAE, 20th June 1897.

ACCOUNTANTS ON ESTATES.

DEAR SIR,—Don't you think it would be a good idea if sundry and several estates guaranteed an income of say Rs.100 and horse allowance to an accountant who would go round the different estates and make up the rough cash books and prepare statements for owners and agents? We are all able to keep daily cash books and balance our cash, but double entry and preparation of accounts in good style is a failing amongst the planting community. I understand that this is the method adopted in Ceylon and works well. There are many Eurasians or even natives who are good accountants and who would be glad of the job, and I am sure if you take up the idea and recommend a man, he would be well supported and earn more than I have suggested.

P.

COST OF LIVING ON A PLANTATION.

SIR,—This is an interesting subject to a great number of your readers, and I hope a few more letters, blending instruction with amusement, will appear on the point.

Accident of residence would appear to regulate the amount and character of the expenditure very considerably, and food would seem to be twice as cheap in some districts as in others; while a young man living in a populous district with lady inhabitants *must* spend more on his clothes than a jungle-wallah, miles from any one else, need do.

The number of visitors a man has, too, is a serious point, and I think we should criticise the accounts given in a more liberal spirit than "On the Cheap" does, who calls a very moderate drinker in the North a "sink." Now (even leaving out visitors) one bottle of Bass for dinner and one peg of whisky a day, which is all that "Indigo Assistant's" liquor bill comes to, does not constitute a man a "sink" I hope. My own feeling is one of envy that I cannot imitate "Indigo Assistant" in drinking Bass, but am obliged to content myself with light imitations of beer, such as Pilsener. The other 60 bottles or so of soda not wanted for the whisky (as I presume that a man of "Indigo Assistant's" fine taste in beer would not spoil three bottles of good whisky by diluting them with 96 sodas) are easily got rid of by drinking one when he comes in from his morning's work, and another in the afternoon. "On the Cheap" possibly drinks twice as much in water and weak tea (which though cheaper is thirstier behaviour) and then thanks his stars he's not such a sink as other men are. When a man drinks one bottle of whisky a month, he must either take it as medicine, or keep it for Sundays.

One point that puzzles me in both "Ex-Creeper's" and "On the Cheap's" letters is what they do with their dirty clothes. Neither of them employs a dhoby; and though the "butler" may wash flannel shirts and socks in the bath, and dry them in the kitchen, yet surely there are many articles, such as table linen, used even by men living on the cheap, that need professional handling, and I think *something* should be put down for dhoby, and docked from "On the Cheap's" tobacco, which I consider excessive, and thank my stars I am not such a chimney.

"Ex-Creeper's" Rs.16-4-0 for bazaar is too wonderfully cheap for this part of the world, where I find that mutton for myself alone at 4 as. a lb. comes to Rs.3 per week, or Rs.12 per month,

leaving only Rs.4-4-0 for other bazaar items. Of course this may be considered gluttony by "On the Cheap;" it may be so (we all have our faults), and perhaps some of it ought to be docked to pay for the dhoby.

I once, like "On the Cheap," had to live as cheaply as possible, and with the greatest economy I found that Rs.75 per month (and no clothes bought) the least I could manage on. I had two luxuries though, for I did not throw up my Club, to save the subscription, and I stuck to my *Madras Mail*. Your other correspondents seem able to do without these items. I drank nothing myself, and kept only a certain amount of whisky for visitors; but local prices were high, and my bazaar account was far heavier than any of your other correspondents.'

What I should like some amiable correspondent to tell me now is, how to find two bottles of whisky "ample" for passers by, without my having, in nine cases out of ten, to lock them up, and either pretend I haven't got any whisky, or boldly to say I have it, but won't produce it. Both courses are very painful to me, for if I look up a man after a long ride, and can't get a drink, I feel that "sink"—ing feeling that "On the Cheap" objects to very strongly; and as I should like to do others without being done by them, some cheap substitute (that they will drink) to palm off on my friends would be very welcome.

My opinion is that on Rs.100 a monthly respectable existence is possible, if strict economy be studied—that no gentleman should be asked to live on less—and that if the business cannot afford to give so much, a respectable Native or Eurasian should be employed. No young gentleman should be set over a lot of natives on a pittance of Rs.50 to 70 a month; with an old hand like "On the Cheap" it is different, for a man who understands natives could live on Rs.40 a month, and be considered a lord, while an inexperienced youngster would suffer in his authority.

VAN RESD.

COFFEE PLANTERS AND THEIR CURERS.

SIR,—One often hears a lot about "curers" and that they do not do justice to planters and that their charges are high, etc., etc. One of the chief causes of annoyance is the loss in drying coffee at the works, and it seems hard to account for; but I think if planters will follow the figures given, they will find that the "curer" is not to blame. 18 bushels in 1,000 is a fair allowance for dryage. Planters seem to forget that when parchment coffee has by exposure to the low country sun arrived at a dry point, any further exposure makes the parchment so brittle that it pulverises when swept up for measuring and bagging. One can hardly expect the "curer," who is limited to time, to take on labour and dismiss it at will any more than we planters can if our crop comes with a rush, and so a higher percentage of dryage is recorded in the "curer's" books; there are two degrees of dryness, I believe, "bone" dry and "horn" dry, the latter when you can indent the bean with your teeth instead of cracking it like a nut. Coffee will peel in the "horn" dry state, but I do not think any respectable "curer" would do so; it is only practised by "cheap" men. There is another point about drying coffee of which planters seem to know very little, viz:—Parchment will lose 2lbs. 1st day and 4lbs. 2nd day!! that is, if coffee arrives at about 40lbs. per bushel. Another complaint against the "curer" is the difference between "Estate" and "Yard" measurements, but I don't think there is much to "kick up a row" about (although I have often "growled" myself about it!) and if the whole of the coffee received by curer were taken into account, I do not think it would work out at more than '019, although individual lots are sometimes 2 to 5% short; but *turns* are freely discussed by planters, and many planters gauge the "curer's" efficiency by it, or in other words how much is stolen from the "curer's" yard!! The above seems strange, but is nevertheless true and only shows how far some planters will go if they get a bad out-

turn; but it hardly seems necessary to defend the "curer," for you must remember they are a body of men managing large "curing yards" and holding large sums of money accused of not being able to take care of produce entrusted to them; still the idea is abroad that systematic robbery is allowed in the curing yards, but it is ridiculous on the face of it. The best out turn I ever heard of was 79 bushels, but several cases of 80 bushels are known, but they are more the exception than the rule. Personally I am satisfied if I get 95 right through my crop.

Some planters have asked the following question:—What do curers grant as to the maximum waste of weight allowed on coffee shipped home? I believe the answer is "Nothing"!

The following, I believe, are correct weights:—

Single bags net weight shipped	...	...	...	168lbs.
" " " " of bags	...	...	...	2½
	Gross	...	...	170½
Trade tax on bags	3	...	...	5
Draft " "	2	...	...	165½
				2½
Net loss to planter	...	...	...	
			Net Coffee	168lbs.

The question of "Draft" is often discussed by planters. Broker to whom the question was, I believe, submitted, wrote:—"Dealers have persistently refused to buy without customary allowances." The question of draft is a serious one, and I believe all agents have from time to time tried to reduce it but with no success; the planter is at liberty to impose any condition he likes on the London trade when selling his crop, but he will I think, come off second best!!

Prices are governed by certain trade customs and allowances and it would be folly to try and attempt to interfere.

Some time ago planters agitated for a reduction of curing charges, and I believe some firm or firms offered to do it for Rs.35 per ton, but I do not care to say too much on the subject. I will, however, give my opinion, and it must be taken for what it is worth (not much I'm afraid!) I am, however, fully convinced that no honest curer can do the proper amount of work necessary to cure a ton of coffee for Rs.35 per ton and at the same time leave a fair margin of profit for himself. In these days of "leaf" and "drought" the expenses of *garbling* have been very much increased, but the question of curing "freight" is a subject much discussed. Some years ago the B.I. agents offered to contract for Rs.35 per ton, while the coffee steamers were asking 4/- and some planters contracted to ship with the B.I., ignoring the fact that the B.I. rate is 12 cwt. (Bombay scale) at the time or 52/6 for 18 cwt. (coast scale), so the planter was paying 10/- more to ship by the B.I. than he would have had to do with coffee steamers! The shipper by B.I. has the benefit of transshipment at Bombay, with the "luxury" of having coffee delivered in London in "lots," the coffee being shipped by P. & O. at Bombay, and these P. & O. sometimes have no room for the whole consignment! but this I know is a "sore point" so I'll shut up!

"KOLA"

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contains ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Orders should be booked early for the present crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. Germination guaranteed.

Only thornless variety extant, and is not procurable anywhere from the MANAGER, ARIENKOW ESTATE.

COFFEE.

White ants.

One does hear occasionally of white ants attacking tea, but we do not remember ever having seen or heard of similar cases in coffee. Yet, among the various ills the unhappy Shiré Highlands planter has to put up with, is this formidable pest. Says a correspondent to the *Central African Planter*:—

"Until I came to Namasi I never saw coffee injured by white ants, but here they are not so particular as they do the same to several other plants, dead or alive. The ants are larger, and they almost do without the usual tunnel of soil or clay, and climb the trees on a dull day or in the night time, without any protection but shade. They do more harm in the wet season. Where the coffee is stronger they leave a longer stump which grows again, but young coffee are cut down level to the ground and seldom recover. Mr. Ferguson of Coorg had never seen white ants do the same in India. Only a few acres are affected badly, but there are a few all over the plantation."

King Coffee!

Our good friend the *Ceylon Observer* still sticks to his opinion that coffee cultivation is practically abandoned in South India. The reason he bases his contention on is the fact of the steady decline in crops, which decline he apparently entirely attributes to land going out of cultivation. This is not so. The reason of the shortage of crops is due to successive bad seasons, coupled with very bad attacks of leaf disease. Let our worthy but aged contemporary attempt a trip to the coffee districts of South India and see what land he can pick up fit for planting coffee in! The good old king may be decrepit, but he is not quite so moribund here as Island folk would fain believe. The contrast between the position in the East generally and that of the West is certainly striking, i.e., that while 20 years ago the produce of both was about the same, the West now say twelve times as much as the East.

Cuttings.

In reading a recent notice of a book called "The Nature and Cultivation of Coffee" by Mr. Arthur R. W. Lascelles, we notice the following paragraph:—

"It may not be generally known that coffee propagates readily by cuttings; but if the cutting be taken from one of the side branches, it will never form a centre stem, but will always evince the peculiar characteristics of the lateral branches; but if on the other hand, a sucker or shoot be planted, it will form a plant perfect in all respects and in no way to be distinguished from a seedling."

At first sight the fact that coffee can be propagated by cuttings seems more curious than important. Yet if one reflects on the value of pedigree seed, i.e., seed from an always heavy and healthy cropper, which will come true to name, and the difficulty of obtaining it pure, the prominence we have given the matter will be explained. Cuttings from any given stock will be absolutely certain of reproducing the habits of their parent. So that given a hundred really good trees, the commencement of a most valuable young clearing might be made without any difficulty. It seems a great pity that what seems to us to be a point of crucial importance to the industry should be treated with the neglect it has hitherto received.

The Market.

"Throughout the week," says the *P. M. Review* of the 5th June, "trade has been quiet, and still continues dull. There was little demand for the large supply offered by auction on Tuesday last, and ordinary qualities of Costa Rica sold at a

decline of 1s. to 1s. 6d. At yesterday's sales, which also consisted chiefly of Central American and Colombian sorts, good supplies were offered, but less than one-half was sold at about previous rates. Plantation Ceylon still commands high prices."

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended May 29, 1897.	Tons. 330	Tons. 247	Tons. 591	Tons. 497	Tons. 14,208	Tons. 12,212
For the 21 weeks ended May 29, 1897.	6,253	6,298	8,194	9,737	...	...

TEA.

Tea bulking.

We extract the following interesting remarks from a Ceylon exchange:—

As the subject of tea bulking is much in evidence at present, and perhaps justly so, a few remarks on it may not be altogether amiss.

In the early days of the Tea Industry here, a high authority stated in the *Observer* that the way to bulk tea was to put it in a heap from the bins, then spread it out in a circle, then heap up again and so on till a perfect equalization was obtained. This is a slovenly plan, as the coolies would be kneeling or squatting amongst the tea.

In absence of a bulking cylinder, a neat and sure way is to operate on a floor 30 or 40 feet in length by 10 feet in breadth, the tea brought from the bins in pails or bags, then poured out shoulder high, from end to end of the space above mentioned. All bins containing the grade should be opened simultaneously, and the charges of pails or bags poured out alternately from the several bins. When finished the heap of tea will be at an angle, like road metal, several feet in width at the base.

The tea of various fields, and days' makes, will now be in *strata* in the heap; all that is required is to turn it carefully from end to end twice. The further handling of the tea in final firing and packing will thoroughly mix it, all differences will be incorporated, or bulked. This work is soon learnt by coolies, and is done very speedily and costs little or nothing; but it is so very important for both buyer and seller, by samples, that the Superintendent should see it done. Should he choke with the tea bloom, no matter. It is easy to *close up the ranks!*"

The Home Market.

Indian Teas.—Although only about 7,900 packages were offered at this week's sales, says the *Produce Markets Review* of the 5th June, this quantity proved in excess of requirements, as the larger portion consisted of undesirable sorts. Prices generally for the common kinds were irregular and in some cases easier, but the more useful parcels fetched quite former rates. The medium descriptions were again well competed for, and brought stiffening rates, and the tendency of the market for these is towards higher prices, as short supplies appear probable. For fine and finest teas there was active competition, and for the few lots offered decidedly firmer prices were paid. The first estimate of the coming crop amounts to 156,500,000 lbs.; of this quantity 138,500,000 lbs. will be available for this market, or 6,000,000 lbs. more than in the season 1896-97. The reports from Calcutta are not of a favourable character respecting the quality of the tea coming forward, and, from the prices fetched at public sales, it would appear that a large proportion consisted of the common sorts, with

which this market is overburdened. The figures for May, as compared with the same month last year, are, on the whole, favourable. The imports were 493,000 lbs., against 235,000 lbs., while the deliveries have increased 1,400,000 lbs., the quantities being 11,232,000 lbs. and 9,831,000 lbs. respectively; the excess in the stock, although 5,465,000 lbs., is smaller than in the previous month, but it is still equal to about three months' consumption. The public sales comprised 7,903 packages, 1,604 of which were withdrawn, consisting mainly of the commonest descriptions. At Calcutta, on the 3rd inst., 9,000 packages were submitted to public auction, and, owing to the poor quality, low prices ruled.

Ceylon Teas.—The quantity catalogued this week for public sale has again been large, but notwithstanding the increased quantity brought forward, and the advent of the Whitsuntide holidays, prices have been generally firm, while in some cases a hardening tendency was noticeable, with an occasional advance. This was more particularly the case with Broken Pekoes, about 8d to 9d, which were in strong demand, and although the market cannot be actually quoted dearer for these grades, higher prices were in a few cases paid. The finest descriptions, as is usual at this period, are scarce, and command high prices. At the public sales 28,900 packages were offered, of which about 2,200 were withdrawn. The following are the figures for the past month compared with May last year: The imports amounted to 8,142,000 lbs. against 7,466,000 lbs., and the deliveries were 8,919,000 lbs. and 6,749,000 lbs., while the stock stands at 19,953,000 lbs. as compared with 18,557,000 lbs. The exports from Colombo during May amounted to 9,500,000 lbs., which are considerably below the estimate.

DISTRICT ASSOCIATIONS.

WYNAAD.

Next Meeting postponed from July 7th to July 21st by request.

PROCEEDINGS of a General Meeting held at Meppadi Club on Wednesday, June 9th, 1897. Present:—Messrs. Day, Handley, R. Lamb, Mackinlay, Powell, Robinson, Romilly, Taylor, Trollope, Waddington, Winterbotham, and Mr. Hockin, *Honorary Secretary*.

1. *The Proceedings of the General Meeting of March 3rd and Special Meeting of May 19th* were taken as read.

2. *S. I. P. E. C. Report.*—Read three circulars from Sec., U. P. A. S. I., re Report of the South of India Planters' Enquiry Committee. Resolved—That the Hon. Sec. address the Chairman, U. P. A. S. I., and the Honorable Mr. H. P. Hodgson, requesting that a copy of the report be supplied to the Hon. Sec. of every Association at least three weeks before a Committee Meeting is called and that the final consideration of the Report be postponed till the Annual Meeting of the U. P. A. S. I. at Bangalore in August.

3. *Powers of Delegates to U. P. A. S. I. Meeting.*—Read circular from Sec., U. P. A. S. I., requesting the opinion of the Association as to whether delegates to the Annual Meeting of the U. P. A. S. I. shall be free to hear all arguments and discussions and then vote according to their convictions, or if they shall be instructed to vote only in a particular manner. Resolved—That except on minor points it is impossible to expect any Association to be bound in any matter, on which planters feel strongly, by the act of a delegate voting contrary to, or in ignorance of the views of the majority of that body; and that it is desirable that no matter of any importance be decided at any meeting of the U. P. A. S. I., unless the matter has been fully explained to District Associations two months before such meeting.

4. *Individual Membership, U. P. A. S. I.*—Read two circular letters from the Secretary, U. P. A. S. I., explaining Mr. Parsons' scheme. Resolved—The meeting is entirely opposed to any scheme of Individual Membership.

5. *Advance of 50 % on last year's subscription.*—Read letter from Sec., U. P. A. S. I. Resolved—That this be treated as a donation to the U. P. A. S. I.

6. *U. P. A. S. I. Reserve Fund.*—Resolved that the money paid by this Association towards the expenses of the S. I. P. E. C. and by members of the same to the Reserve Fund shall be considered as the Wynaad donation to the Reserve Fund. The Association disapproved of a large Trust Fund but does not object to the present moderate Reserve Fund to meet emergencies and to be augmented out of income as occasion serves.

7. *U. P. A. S. I. Finances.* Chairman's scheme for re-organising finances and voting power.—Read letter from the Sec., U. P. A. S. I. giving details of this scheme. Resolved—That this meeting approves of the Chairman's scheme.

I. To abolish the present system of subscriptions and votes.

II. To raise funds by an assessment of 1 anna per acre on the total registered acreage held by members of each Association.

III. To allow each District Association 1 vote for every Rs. 10 so paid, it being understood as the Chairman explains that—

1. Each District Association may raise its assessment in any way it likes.

2. No Association is obliged to pay the full assessment.

3. The only penalty for not doing so will be a proportionate loss of votes. Under the above conditions the Association would be willing to agree to an assessment of $1\frac{1}{2}$ anna per acre if such was thought necessary, provided that (a) The increased subscription from each Association shall include all future subscriptions of members to the Reserve Fund. (b) That any surplus of income over expenditure be transferred yearly to the Reserve Fund. (c) That in any year in which the expenditure of the U. P. A. S. I. exceeds the income, the loss shall be made good from the Reserve Fund. Resolved also that as this is a matter of vital importance it be left for final confirmation till next meeting.

8. *Registration, U. P. A. S. I.*—Read circular from the Sec. U. P. A. S. I. The meeting approved of such registration.

9. *Address to Queen Empress.*—Read circulars from Secretary U. P. A. S. I., announcing that the casket and address were ready enclosing copies of the address and promising photographs of the casket. Recorded.

10. *Scientific Investigation of Leaf Disease.*—Read circular from Secretary, U. P. A. S. I., enclosing letter from the Hon. Sec., South Mysore, proposing this. Resolved: the meeting approves the Honorary Secretary's reply thereto and thinks no useful purpose will be served by such investigation.

11. *Malarial Parasite.*—Read U. P. A. S. I. Secretary's circular giving copy of order of Government of India stating that no enquiry is possible at present, but the subject will not be lost sight of. Recorded.

12. *General Proxies.*—Read U. P. A. S. I. Secretary's circular. Resolved that the meeting does not approve of general proxies.

13. *Statistics.*—Read U. P. A. S. I. Secretary's letter. The Honorary Secretary was instructed to inform the Secretary that the Association are prepared to abide by the return of 11,000 acres of cultivation given in the South of India Planters' Enquiry Committee Report as the total for the district.

14. *Famine Fund.*—The Hon. Sec. stated he had received and forwarded to the Sec., U. P. A. S. I., Rs. 1,195, as the total contribution to this fund from the Wynaad Planters' Association, and was requested to print the list of subscribers.

15. *Annual Meeting of the U. P. A. S. I.*—Read letter from the Secretary saying this would probably be held on the 4th or 9th August at Bangalore. Recorded.

16. *Delegates to the Annual U. P. A. S. I. Meeting.*—Messrs. C. Romilly and J. W. Hockin were elected as delegates.

17. *Form of Contract under Act XIII. of 1859.*—Read draft of new Contract drawn up by Messrs. Winterton and Edge and correspondence thereon. Reserved for future consideration.

18. *Roads.*—Read letter from Malabar District Board District Engineer stating orders for immediate temporary repairs to the Talipoya Bridge had been issued.

19. *Drafts on Treasury.*—Read letter from Hon. Sec. to Accountant-General Madras, and reply thereto, stating that Govt. were opposed to the granting of such drafts. Resolved—That the Hon. Sec. address the Govt. of India, Finance Department, requesting to be informed why such drafts could not be granted for Wynaad as they are now for Coorg and other planting districts.

20. *Post Office*.—Read correspondence *re* want of money in Vayitri Post Office and with Mr. Powell *re* Meppadi Post Office, showing that complaints on these heads had been attended to. Recorded.

21. *Pay of Police*.—Read letter from Superintendent of Police, Malabar. Recorded.

22. *Malabar District Board Member*.—Read letter from President stating Mr. J. W. Hockin had been appointed as a member of the Board. Recorded.

23. *Poodoopady Rest House*.—Read letter from Mr. Trollope. The Hon. Sec. was requested to communicate with Mr. Ferguson on the subject.

24. *Resident Engineer*.—Read correspondence with Hon. Sec., Nilgiri Planters' Association. Recorded.

25. *Medical Fund*.—Mr. Waddington tendered his resignation as Hon. Sec. of this Fund and was requested to reconsider his decision but regretted he was unable to do so. Resolved—That this Association accepts Mr. Waddington's resignation with extreme regret and takes this opportunity of thanking him for having succeeded in putting the Medical Fund on a sound financial basis and for his services since rendered as Hon. Sec. Mr. Hockin was requested to act as Hon. Sec. and Mr. Robinson as Treasurer of the Fund.

26. *Failure of Service of Warrants*.—Mr. Robinson was requested to report his case to the Hon. Sec. for transmission to the Superintendent of Police, Malabar.

A vote of thanks to the Chair closed the proceedings.

(Signed) G. ROMILLY, *Chairman*.

(„) J. WILLIAMS HOCKIN, *Hon. Secretary*.

COORG.

PROCEEDINGS of the Annual General Meeting of the Coorg Planters' Association held on Monday, 31st May 1897, at the North Coorg Club, Mercara.

PRESENT: Mr. John Logan, *President*; Messrs. A. Bopanna, H. F. Davy, E. A. Fennell, C. G. Maclean, E. L. Mahon, Jas. T. Morgan, C. M. Nanjappa, F. N. Pearse, G. R. Pearse, C. Thimmiah, R.B., J. S. Trelawny, H. C. Wood; G. F. Meiklejohn, Commissioner of Coorg, *Honorary Member*; Major Penno (Visitor); G. B. Wake (Visitor); H. G. Parsons, *Hony. Secy*.

The President welcomed Mr. Meiklejohn, the Commissioner of Coorg, and hoped that he would give the Association the benefit of his advice so far as his official position would permit.

In identifying himself with the Association, greater confidence would result as between officials and the planting community.

Mr. Meiklejohn, in thanking the meeting for the welcome accorded him, remarked that he recognised the prosperity of the Province was largely dependent upon the planting enterprise, and that he would do all in his power to assist the industry.

Annual Report.—The Honorary Secretary then read the report and placed the accounts on the table.

ANNUAL REPORT.

GENTLEMEN,—On behalf of your Committee I beg to submit the following report on the business of the Association for the past twelve months.

Crops.—The season just closed has turned out disappointing; large crops were not expected, but the result was even worse than anticipated.

The prospects for 1897-98 are also poor, and there may not be an improvement on last year.

It would appear that the unseasonable weather is chiefly accountable for these short crops, for in a few exceptional cases they will be good, and even estates that are known to be in a high state of cultivation have unaccountably failed.

Labour has been plentiful and estates maintained in high cultivation.

Borer.—Two successive dry seasons may conduce to severer attacks of "Borer," but the dense shade will probably minimise damage; at the same time the coffee districts are now so heavily shaded that crops have been undoubtedly reduced.

Tea.—Attention has been directed to the introduction of Tea, and the Coorg Government are to be congratulated on the encouragement they have extended towards those willing to experiment and pioneer.

Tea if successful should in years to come assist in establishing the

prosperity of this Province, for the natural advantages, in favour of profitable cultivation, are considerable.

Chief Commissioner.—Mr. Mackworth Young, Chief Commissioner of Coorg, handed over the Government to Col. Donald Robertson in December 1896. A reference to our proceedings for years and our experiences must reconcile us to the fact that the Government of India consider an annual change of Chief Commissioner to be to our advantage.

In Col. Robertson we are fortunate to have an officer who is deeply interested in the prosperity of Coorg, and one who is not new to the Province.

Your Committee in February met the Chief Commissioner at Mercara; a report of the deputation has been circulated among you.

In April Col. Robertson paid a demi-official visit to Coorg, a favour not extended to us by other Chief Commissioners for several years, but one to be noted and appreciated, the more especially as there appears to be considerable discontent among the inhabitants of the Province for probable causes referred to later in this report.

U. P. A. S. I.—Those of you who have obtained copies of the 1896 book of proceedings will have remarked the steady work that is being done by the U. P. A. S. I. Some statistics appeared in the book but were far from complete; however, your Honorary Secretary cannot do more than deal with the material supplied, and trusts that the directory forms just circulated will be all returned. The question of individual membership of the U. P. A. will be dealt with to-day, and you will probably endorse your previous resolutions that the principle is one that must be admitted.

The objections now appear to be imaginary: however, your Honorary Secretary does not propose to press the question at the U. P. A. meeting in August. If delegates are to attend with instructions to vote to order, the business of that assembly would then become a farce.

The Government of India appear to doubt the jurisdiction of the courts under Act XIII. of 1859, and the U. P. A. are watching our interests, but we hear the Chief Justice of Madras declines to allow counsel to appear and argue on our behalf.

Railway.—Your Association have lost no opportunity of urging Railway extension upon which the maintenance of the future prosperity of this Province so largely depends.

Your Honorary Secretary attended a conference at Bangalore in August 1896 convened by Mr. Mackworth Young, but regrets to say that he does not think the subject has progressed.

The interest and importance of the question will lose nothing during Col. Robertson's tenure of office, but your Association feels keenly that no preliminary steps are contemplated.

We have been told to produce figures and we have done so. We asked Mr. Lee-Warner that an expert may be deputed to examine our figures and report on the sources of traffic. We understood from his reply to our deputation in April 1895 that this would be attended to. We now note with mingled feelings from a para. in the *Madras Mail* that the Pudukottah State has started an identical proposal which is to be immediately acted upon. The question of how the line is to enter Coorg, or where it should go, is one which is not of the greatest importance to us. It is our policy to support a scheme there is the best chance of obtaining.

Your Committee believe that the proposed line most in favour with the Chief Commissioner, Mysore Durbar, Commissioner of Coorg, and others is an extension of the Arsikere-Hassan line to Sidapur (Coorg) which if continued from Hassan *via* Yedatore to Mysore on the east and Ammatti-Sampaga Ghat to Mangalore on the west will meet our requirements.

In advocating the above, your Association are fully aware that a more direct and probably better service for the Province would be an extension from Tellicherry *via* Coorg to Mysore; however favourable such a line would be, your Committee must fain admit the proposal does not receive the countenance and support of those with whom the question to a great extent depends.

P. W. D.—We understand the P. W. D. grant has been reduced to Rs. 1,60,000, a sum hardly sufficient to enable the Department to keep up its standard of efficiency.

Your Committee regret that the Province has lost the services of Mr. M. Leslie, late Executive Engineer, to whom a vote of thanks was forwarded from this Association.

We welcome his successor, Lieut. Rivett-Carnac, R.E., who may rely upon receiving from the members of this Association the same support and assistance as extended to his predecessor, and we sincerely hope that his relations with us may be as cordial.

Several roads are required in the Province which at present there is little hope of being immediately constructed, and in the face of a large annual surplus revenue it would seem that more might be done in this department. The following roads and bridges have been urged for years:—

- | | |
|-------------------------|----------------------------|
| 1. Ponnampett-Wynaad. | 4. Sidapur-Suntikoppa. |
| 2. Pollibetta-Sidapur. | 5. Madapur-Hatti bridge. |
| 3. Veerajapett-Nalknad. | 6. Suntikoppa-Somawarpett. |

Regarding the Pollibetta-Sidapur Road, there must be some mistake as to the reason for non-construction as stated in the Administration Report of 1895-96, page 18, para. 167, clause 4.

On 28th December 1895, a report and valuation was submitted to the Commissioner of Coorg, showing that the land compensation was assessed at Rs.1,000 by the Executive Engineer, Subedar of Yedanalknad Taluq.

Mr. A. Bopanna and your Honorary Secretary, and further a deputation of your Association to the Chief Commissioner, Mr. Mackworth Young, on 3rd January 1896, informed him that many of the ryots were prepared to grant land *free*, which land we have not yet heard has been taken over. In face of the above facts, we think it hardly correct to report that this road was not proceeded with owing to the prohibitive compensation asked for by the owners of the land through which the road will pass.

The Bamboo district attach so much importance to this road that they are prepared to agree to a toll to be imposed for the special purpose of providing funds, and would emphatically point out to Government that the road will be of benefit to the whole district and not a few proprietors in the immediate neighbourhood. Attention is drawn to the P. W. D. Administration Report of 1895-96, page 2, section 10, giving an accurate history of this road.

Police.—Until we have an Assistant Superintendent of Police, we need not look for much improvement in this dilapidated force.

The District Magistrate has ample work to keep him employed without the duties of Police Superintendent.

Your Committee would be pleased to hear that they have been mistaken in stating that in the last ten years not one instance of house-breaking into European dwellings has been detected by the Police, and several are well known to have occurred.

A European Inspector has recently taken up his duties, but this is not what we want.

The Province is entitled to an Assistant Superintendent, and we would again urge, as Mr. Lee-Warner pointed out, that the offices of Police Superintendent and District Magistrate are incompatible with one another.

Forests.—Satisfactory rules as to grazing in Government Forests have been published in the *Gazette*, and we are now allowed, at a slightly enhanced rate, to graze all the year round.

The area of Government Forests under all heads amounts to 570,739 acres.

Postal.—The postal communications between Coorg and the West Coast have been much improved, but in the promotion of Mr. Farrer, late Postmaster-General, we have lost one who had personally taken a keen interest in the Province. Witness the mail tonga service.

There have been many complaints as to the inefficiency of the special tongas supplied by the contractor, and it is to be regretted that this department of the Mail Contractor's establishment should be steadily deteriorating.

Motor Car.—A member of your community proposed to run a Motor Car from Mysore to Mercara.

While willing to give every support to the proposal, your Association wish to see matters take a more definite shape.

Coffee Stealing.—There have been no cases of importance reported to your Coffee Stealing Prevention Fund during the past season, and the balances in hand are for the present sufficient.

Jamma.—The imposition of an extra cess of one anna in the rupee on Jamma holdings and all other cultivated lands has caused discontent, and it is a question whether the Government of India are wise to impose a tax concerning the justice and good faith of which there is some doubt, and from which a revenue of not more than a few thousand rupees can be raised.

The alienation of Jamma lands has its advocates, and with certain provisions it would seem advisable.

Bane.—The desirability of a better title to Bane holdings was brought prominently to the notice of the Chief Commissioner in February, and is no doubt receiving his attention.

The enhanced assessment of 4 annas an acre to establish a right seems altogether unnecessary, and had it not been for the strong opposition of Mr. Meiklejohn, our Commissioner, to whom the thanks of the Association are due, a large increase would have been imposed on Bane lands.

With a surplus revenue of 3½ lakhs, the imposition of fresh tax seems unnecessary; but if Government are desirous of establishing right and acting on principle, surely a nominal increase in cess would meet the case.

General.—Mr. L. E. Buckley, I.C.S., officiated as Commissioner during Mr. Meiklejohn's absence on leave, and in place of Mr. Leggatt, retired, Mr. F. E. Carr has been appointed as District Magistrate.

The revenue of Coorg for the year 1895-96 amounted to Rs.9,65,300, the highest on record. The surplus was Rs.3,26,818, as against Rs.3,53,497, but there was an increased expenditure of Rs.27,925 on public works.

The land revenue demand amounted to 3,96,205, of which the revenue from coffee land amounted to Rs.1,33,313, or one-third, and the land record cess yielded Rs.34,873.

The area of assessed coffee lands equals Rs.84,991 acres, an increase of 399 acres, and the coffee crop was about 4,000 tons, worth, say 56 lakhs; the value of coffee property may be estimated at £2,000,000. With reference to a remark earlier in this report as to the discontent among the inhabitants, from information gathered and through the Coorg gentlemen, members of this Association—and who we are pleased to see strongly supporting us—the causes would appear to be: (1) the changes in the rate of land taxes, the people not knowing what next may be sprung on them; (2) the tax of one anna in the rupee on Jamma and all other lands; (3) the tax of 4 annas per acre on Bane; (4) the summary attachment of property when land tax is not paid. As to causes 1, 2, 3, we are strongly of opinion that such variation of taxes creates distrust and unrest always to be deprecated in dealing with a people who cannot understand the object of Government in continually altering rules and customs especially in connection with land. With regard to clause 4, your Association would strongly urge that the Government show every reasonable consideration to the people with reference to revenue demands; it sometimes happens that a person may be in a position to pay in time, but if property is summarily attached and advertised for sale, credit is damaged and discontent set up, due perhaps to the absence of a little leniency. Your Association would especially urge consideration in the coming year; there must be considerable privation caused by several bad coffee crops. Doubtless a certain measure of discontent has arisen owing to the stringent and probably necessary measures in the collection of revenue as compared with former years, but this alone does not account for the apparent unrest and want of confidence felt by the people. Your Committee would draw your attention to the remarks of Mr. Mackworth Young in his review, No. 1816, dated 2nd December 1896, paras. 6 and 7, the more especially where he says as follows:

"In connection with the new settlement, proposals have been made since the close of the year for the abolition of certain antiquated and unequal taxes, for the introduction of a local rate together with a measure of self-government which, if sanctioned, will mark a new era in the administration of Coorg."

"Mr. Mackworth Young endorses the remarks of his predecessor regarding the cheapness of the Coorg administration, and he has endeavoured quite recently to point out how it should be strengthened and placed upon a satisfactory basis. The proposals he has made involve additional expenditure which, however, is fully justified by the large annual surplus of the Province; but the present financial position stands in the way of any immediate amendment. The amelioration of the Police Department is one of the most urgent needs of Coorg."

We trust that this Association may have every opportunity of discussing any new measures that may be under consideration; and venture to hope that Government may allot more funds for works that have been urged for many years prior to the present financial troubles.

The question of experimental cultivation should receive more attention from the Agricultural Department which we are supposed to have, and it would not appear out of place to suggest that the services of a veterinary officer would be valuable where stock forms a large proportion of the capital of the ryot. At present there is absolutely no scientific aid in cases of cattle and other diseases.

These are a few questions deserving of attention and are justified from the annual surplus of the Province, and the increased burdens on land the Government are about to impose.

In conclusion, your Committee sincerely regret the loss of Mr. G. R. Evans, who died in London in May 1896, and who took the greatest interest in Coorg and the affairs of this Association.

More recently we have to deplore the death of an old pioneer in Mr. J. Brewer, who died in Madras.

Accounts.—The accounts are laid on the table in addition to the ordinary work of the Association; there have been the "Famine Fund" and the "Reserve Fund" of the U. P. A., and the work of the Association becomes annually more and more exacting, and your Honorary Secretary trusts you will excuse him for any shortcomings you may have noticed.

The accounts show a balance of Rs.233-8-9 in favour of the Association, but the large outstandings are much to be regretted. Members are earnestly requested to pay up if they honestly wish to facilitate the duties of the Executive.

Reserve Fund, U. P. A.—With few exceptions the U. P. A. Reserve Fund has been loyally supported, and your Committee thank all subscribers for their donations.

Rs.2,981 have been promised by members of the Coorg Planters' Association, of which Rs.2,116 have been paid in and remitted to the Secretary, U. P. A., including Rs.250 paid direct by Mr. W. H. Sprott. Unfortunately several members have as yet promised nothing.

Famine Fund.—Rs.627 have been subscribed to the Indian "Famine Relief Fund" and forwarded through the Secretary, U. P. A.; this amount would probably have been larger, but there was another Fund started in the district to which several had subscribed before the Association subscription list was published. At the Annual General Meeting held on 29th May 1896 there were 66 members on the books of the Association; we have lost during the year two by death, and one recently resigned. One member has rejoined, and the register shows a membership of 78 at the commencement of the new year, an increase of 12, and your Honorary Secretary tenders his best thanks to all those who have supported him during the past season.

Gentlemen, your Committee trust this report will meet with your approval, and now beg to tender their resignations and that of your President and Honorary Secretary, and ask you to open the ballot papers and elect new officials for the year 1897-98.

Proposed by Mr. E. A. Fennell, seconded by Mr. J. S. Trelawny, that the annual report and accounts as read be adopted.

Carried *nem. con.*

Ballot.—The following gentlemen were elected for the year:—

<i>President.</i>	<i>Honorary Secretary.</i>
John Logan.	H. G. Parsons.
	<i>Committee North.</i>
W. M. Ball.	H. Mann.
E. A. Fennell.	E. Meynell.
W. G. MacKilligin.	W. H. Sprott.

	<i>Committee South.</i>
A. Bopanna.	J. S. Gerrard.
E. M. Breithaupt.	H. G. Grant.
F. W. Gerrard.	A. Lambert.

Proposed by Mr. Fennell, and seconded by Mr. Davy, that the ballot papers be revised before next year.

Mr. Davy pointed out that one or two members were noted as North Coorg, whereas their interests were chiefly in the South, and suggested alterations. *Recorded.*

Delegates, U. P. A. S. I.—Resolved that one member be elected by the North Coorg Committee and one by South, and one by the Coorg gentlemen, to accompany the President and Honorary Secretary to the meeting of the U. P. A. S. I. in August.

Circulars, U. P. A. S. I.—The Honorary Secretary then acquainted the members with contents of various circulars received from the Secretary, U. P. A., from 1st March to 31st May. *Recorded.*

Individual Membership of the U. P. A. S. I.—It was resolved that this Association do adhere to the resolutions already passed that such members are desirable and should be admitted.

The Honorary Secretary then made the following statement with reference to this question. Mr. Parsons spoke as follows:—

"I have circulated through the Secretary, U. P. A., to the various Associations a modified and detailed scheme for individual member-

ship of the U. P. A. S. I., but if the principle is accepted, details as to rate of subscriptions, etc., may be fixed by the meeting.

"I have, however, informed the Secretary, U. P. A., that there is no intention of submitting the scheme if delegates are deputed to vote to order. I maintain in this case that the meetings of the U. P. A. would become a farce. Delegates may receive instructions, but should be allowed discretion to vote as they may deem fit after hearing arguments in the course of debate.

"The objections to individual membership are now brought down to two heads, viz.:—

1. Association of Associations.

2. Balance of voting power.

As to (1) I have no wish to alter the constitution of the U. P. A. as an Association of Associations, but to enlarge the scope of membership. (2) The limiting of individual members to the number of votes owned by an Association obviates the possibility of units combining and outvoting their Association delegates. Where then are the objections to individual members? Unless it be that one Association by delegates and individuals may become too powerful: this may be possible if one district does its duty more than another, but the remedy is obvious.

"I am firmly and honestly convinced that if the U. P. A. really wishes (1) to increase its income and establish a Reserve Fund (2) and to create a direct personal and active interest in its affairs throughout the planting community of S. India, then membership is the only means of securing these objects.

"Other Associations do not think it will succeed. I go so far as to say, give the scheme a trial for two years, and I am prepared to accept the result as final.

"Other schemes such as that District Associations shall subscribe Rs.1,000 a year are worthy of consideration, but I have no hesitation in saying that no guarantee can be given by any District Association for, say, ten years, and as far as we in Coorg are concerned, we are unable to hold out any promise of such a thing.

"It would mean increased subscription. Those who are prepared to join the U. P. A. would not object, but there are many who would go off the list, and for my part I shall be curious to see how the method of raising funds in Mysore is found to work smoothly.

"However, it matters not what scheme is adopted. Coorg, I am positive, will loyally support the majority, and if questions are carried against us, we should be the last to hint at secession.

"I see an influential member of one Association informing his meeting that if individuals are allowed, one Association after another might secede.

"I cannot permit such a statement to pass unchallenged, because it appears to me uncalled for and ill-advised, and I am confident the U. P. A. is not constituted on such a very slender basis as we are asked to believe.

"The Chairman, U. P. A., is to draw attention to the finances and move a resolution.

"I am glad to have your support as to individual membership, for it appears conclusive that voluntary membership of the U. P. A. is the only way to preserve District Associations as at present and to improve the finances of the U. P. A., and it is pitiable to think that the chief Association should be crippled.

"The scheme of buying votes might end in the U. P. A. becoming the property of the richest Associations, which is undesirable. It might be arranged, however, for Associations who prefer it, to have their votes in this form, but let others such as ourselves have them through the voluntary membership of individuals. I believe there will be a more permanent increase by the latter than can be expected from Associations. Gentlemen, I will not say more; the question may come up in August at Bangalore, when some satisfactory solution should be devised.

"I would withdraw my scheme did I honestly think there was more in the objections than a fear as to what might happen, but as these objections to my mind are more or less imaginary, I persevere, and am convinced that when we see some 300 or more individual members of the U. P. A., then, and not till then, we may flatter and console ourselves that every thinking and patriotic member of the community takes a real and active interest in the great Association."

(Signed) JOHN LOGAN, *President.*

H. G. PARSONS, *Honorary Secretary.*

MARKET SUPPLEMENT.

SATURDAY, JULY 3, 1897.

COFFEE.

Latest advices from London are dated 11th June, and state concerning Coffee:—This market, which has been closed since the date of our last report, reopened yesterday, when supplies to a fair extent were offered at auction. An important parcel of Ceylon Plantation shipped from Trieste was limited above market ideas, but the remainder direct import realised steady values. A small proportion of good Costa Rica and fine East India sold with good demand at full to extreme prices, but for the greater part, which comprised less desirable qualities, the competition was slow and prices, as a rule, shew a decline of 1s to 1s 6d per cwt. The market for futures opened with a stronger tone, but subsequently became quiet, and quotations are rather irregular at the close, viz:—

London.....Santos.....September delivery	...	38s 3d.
New York ...No. 7 Rio.....	" "	7.35 cents.
Hamburg Santos.....	" "	38½ pf.
Havre Santos.....	" "	47½ francs.
Holland Good ordinary Java		46½ cents.

Imports Deliveries and Stock of COFFEE in London are as follows:—

	STOCK.		IMPORTS.	
	1897.	1896.	1897.	1896.
West India..... tons	428	457	624	940
Ceylon.....	105	139	204	279
East India.....	2673	3168	4317	6291
Mocha.....	534	485	432	488
Brazil.....	2548	1423	1098	757
Other Foreign.....	7882	6415	14892	12203
Total tons...	14170	12117	21567	20958

	HOME CONSUMPTION.		EXPORT.	
	1897.	1896.	1897.	1896.
West India..... tons	176	288	375	629
Ceylon.....	78	210	147	257
East India.....	1058	1431	1372	2894
Mocha.....	255	256	101	108
Brazil.....	625	579	1161	1260
Other Foreign.....	4557	3984	5543	5052
Total tons...	6749	6748	8699	10200

The preceding figures exhibit—

In the Imports an increase this year of	614 tons
Home Consumption a decrease of	1 "
Export a decrease of	1501 "
Stock an increase of	2053 "

Auctions have gone off as under:—

CEYLON.—Plantation.—Of 46 casks 9 tierces 17 barrels 1 bag offered 20 casks 6 tierces 14 barrels 1 bag sold, smalls 90s to 95s 6d, low middling 99s 6d to 100s 6d, middling 103s, good middling to fine middling 105s 6d to 107s 6d, bold 109s to 110s, pea-berry 98s to 123s.

Movements of Tea in United Kingdom from 1st June to 31st May, as shown by Custom House Return, are given below:—

	IMPORTS.			HOME CONSUMPTION.			EXPORTS.		
	1896-97.	1895-96.	1894-95.	1896-97.	1895-96.	1894-95.	1896-97.	1895-96.	1894-95.
BRITISH E. INDIES	135,146,943	121,615,070	118,861,815	123,735,159	121,099,847	113,443,076	5,245,489	3,835,856	3,735,0
CEYLON	98,293,864	86,596,784	79,545,771	83,532,450	75,922,038	71,550,480	9,428,653	7,558,234	5,829,5
CHINA	32,358,972	38,448,427	45,730,767	19,515,806	21,788,914	25,493,436	19,946,202	18,644,651	20,984,9
OTHER COUNTRIES	6,675,349	9,159,789	7,170,362	4,423,735	4,290,446	4,640,667	915,941	1,099,005	901,4
TOTAL lbs.	272,475,128	255,820,070	251,308,715	231,207,150	223,101,245	215,127,659	35,536,285	31,137,746	31,450,9

CEYLON.—Liberian.—14 bags bought in.

EAST INDIA.—1,625 bags mostly sold as follows:—Mysore, triage 70s, low middling brownish 86s 6d, dull gray bold 98s 6d, pea-berry 95s 6d, Naidoobatum, smalls 78s, low middling 89s, dull bold 97s, good bold 104 Coorg, good middling colory 94s, good bold 102s, pea-berry 111 Neilgherry, smalls 73s 6d to 83s 6d, low middling 86s 6d, middling we made 90s 6d, good colory 98s 6d, bold 96s to 98s 6d, good bold 101s to 102 fine bold 108s 6d, pea-berry 102s to 114s 6d.

Receipts in Rio and Santos.

	1896-97	1895-96	1894-95	1893-94
June 9—	Bags.	Bags.	Bags.	Bags.
Rio.....	4,000	9,000	6,000	9,000
Santos.....	7,000	5,000	8,000	2,000
Total 5 days				
Rio.....	24,000	28,000	26,000	32,000
Santos.....	19,000	24,000	22,000	6,000
	43,000	52,000	48,000	38,000
Since July 1				
Rio.....	3,401,000	2,268,000	2,597,000	2,511,000
Santos...	4,952,000	2,942,000	3,896,000	1,674,000
Total.....	8,353,000	5,210,000	6,493,000	4,185,000
Crop.....	—	5,489,000	6,699,000	4,307,000

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (June 11, 1897) says Public Sales were resumed yesterday after a week's interval, and moderate supplies brought forward met fair competition at about unchanged rates. Over 1,600 bags East India were offered and realised value for all qualities.

Central American kinds sold irregularly, good prices being obtained Costa Rica, whilst Guatemala and Columbian went rather easier. A qu tone has prevailed in the Terme market and quotations show little or change since our last.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report of June 11th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	7,903 packages.	37,922 packages.	701 packages.
1896-1897...	10,642 "	52,530 "	2,502 "
— pkgs. INDIAN	8,301	Total 8,301 packages were offered in public auction this week.	
— " CEYLON			
— " JAVA			

The Home Consumption and Exports of British Grown Tea during season just closed, although large, have not equalled the quantity imported.

SUPPLEMENT TO "PLANTING OPINION."

Analysis of Export of Tea from U. K. (not including transhipments).

	INDIAN.		CEYLON.		CHINA.		OTHER COUNTRIES.	
	1896-97.	1895-96.	1896-97.	1895-96.	1896-97.	1895-96.	1896-97.	1895-96.
COUNTRIES IN EUROPE	2,193,786	1,598,932	5,198,605	3,945,786	10,468,376	10,469,232	699,398	802,370
UNITED STATES	978,256	638,756	1,549,906	1,466,352	3,006,751	815,774	66,252	67,951
BRITISH N. AMERICA	1,271,643	903,920	1,659,189	1,269,768	2,656,930	2,282,815	32,105	54,093
OTHER COUNTRIES	801,804	694,248	1,020,953	876,328	3,804,145	5,076,830	118,186	174,591
TOTAL lbs. ...	5,245,489	3,835,856	9,428,653	7,558,234	19,946,202	18,644,651	915,941	1,099,005

Stock of all Tea in United Kingdom at the end of May:—1897, 72,759,177 lbs; 1896, 69,601,060 lbs; 1895, 69,263,858 lbs.

Indian. No auctions have been held during the week.

Week's av. of New Season's Tea sold on Garden Account, 1897,
— pks., av. — d. 1896, 1,372 pks., av. 7½d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	— —	27 8½	200 p 9½	47 p 9½
Cachar and Sylhet...	— —	311 7½	49 6	401 p 7½
Darjeeling	— —	70 10½	— —	70 10½
Neilgherry	— —	130 p 8	— —	130 p 8
Travancore	— —	834 p 7½	52 5½	962 p 7½

Total sold on Garden Account 1st June to date 1897, 301 pks., av. 8½d.
1896, 1,610 pks., av. 7½d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	4d	4½d	4½d	3½d
FANNINGS. (Red to brown, strong rough liquor)	4d	5d	5d	4d
BROKEN TEA. (Brownish to blackish, strong liquor)	6½d	7½d	7½d	5½d
PEK. SOUG. (Blackish greyish, useful liquor).	7d	8½d	8d	6½d
PEKOE. (Greyish to blackish, some tip, useful liquor)	8½d	9½d	8½d	9d
PEK. SOUG. (Blackish greyish, inferior liquor).	5½d	6d	6½d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor)	6½d	7d	7d	6½d

Ceylon. 8,301 packages were brought forward, the sale passing with good spirit without material change in quotations, except for the higher grades of good liquoring Tea, prices for which showed a tendency to improve. Average for week rather under 7½d. against rather under 7½d. last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 171,263 pks., av. 7½d. 1896, 440,197 pks., av. 8½d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6½d	6½d	7 d	5½d
PEKOE (Ordinary leaf, little twist; fair liquor)	7d	7 d	8½d	7d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5d	5½d	6½d	4½d
PEKOE (Somewhat bold leaf; indifferent liquor)	5½d	5½d	7 d	5d

Java. No auctions were held, but catalogues are issued for 1,717 packages to be offered next week.

PLANTATION CEYLON COFFEE.

Weekly Statement of Prices for the past 52 weeks compared with the two previous years.

		Middling Plantation Ceylon.					
		1896.		1895.		1894.	
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
May	29	98 6	101 6	100 6	102 6	103 0	105 0
June	5	98 0	101 0	101 0	102 6	103 0	105 0
	12	98 6	102 0	100 0	102 0	103 0	105 0
	19	97 6	101 0	99 0	101 0	103 6	105 6
	26	98 6	103 0	98 0	100 0	103 6	105 6
July	3	100 0	103 6	98 0	100 0	104 6	107 0
	10	100 0	103 6	98 0	100 0	104 6	107 0
	17	100 0	103 6	98 0	100 0	105 0	108 0
	24	100 6	103 6	99 0	101 0	105 0	108 0
	31	100 6	103 6	99 0	101 0	105 6	108 0
August	7	101 0	104 0	100 0	102 0	105 6	108 0
	14	101 0	103 6	99 6	102 0	105 6	108 0
	21	101 0	103 6	99 6	101 6	105 6	107 6
	28	101 0	103 6	99 0	101 0	105 0	107 6
September	4	101 6	104 0	99 0	101 6	104 0	106 6
	11	101 0	103 6	97 0	100 0	104 0	106 6
	18	100 0	103 6	97 0	99 0	104 0	106 6
	25	100 0	103 6	97 0	99 0	103 0	106 6
October	2	100 0	103 6	97 0	99 0	103 0	105 6
	9	100 0	103 6	95 6	98 6	103 0	105 6
	16	100 0	103 6	95 6	98 0	103 0	105 6
	23	100 0	103 6	95 6	98 6	103 0	105 6
	30	100 0	103 6	96 0	99 0	102 6	105 6
November	6	100 0	103 6	96 0	99 0	102 6	105 6
	13	100 6	103 6	96 0	99 0	103 0	106 0
	20	100 6	103 6	96 0	99 0	103 6	106 0
	27	100 6	103 0	96 0	99 0	103 6	106 0
December	4	100 0	103 0	96 0	99 0	103 6	106 0
	11	99 6	102 6	96 0	98 6	103 6	106 0
	18	100 0	103 0	96 0	98 6	103 6	106 0
	25	100 0	103 0	96 0	98 6	103 6	106 0
		1897.		1896.		1895.	
January	1	100 0	103 0	96 0	98 6	103 6	106 0
	8	99 6	102 6	96 6	99 0	104 6	107 0
	15	100 0	103 0	97 0	99 6	105 0	107 6
	22	100 0	103 6	97 6	100 0	105 6	107 6
	29	101 0	104 0	97 6	100 0	106 0	108 0
February	5	101 0	104 6	98 0	100 6	105 0	107 0
	12	101 0	104 6	98 0	101 0	105 0	107 0
	19	102 0	105 0	98 0	101 0	105 0	107 6
	26	102 0	105 0	99 0	101 6	105 6	108 6
March	5	102 6	105 6	99 0	101 6	104 0	106 0
	12	102 6	105 6	99 0	101 6	102 0	104 6
	19	101 6	104 0	98 0	100 6	102 0	104 6
	26	102 0	104 6	98 0	100 6	103 0	105 6
April	2	102 0	104 6	98 0	100 6	101 0	103 6
	9	102 0	104 0	98 0	100 6	99 0	102 0
	16	102 0	104 0	98 6	100 6	98 6	101 0
	23	100 6	103 0	99 6	103 0	99 0	101 0
	30	101 6	104 6	99 6	103 0	99 0	101 0
May	7	101 6	104 6	100 0	103 0	99 0	102 0
	14	101 0	104 0	100 0	103 0	99 0	102 0
	21	101 6	104 0	99 0	102 0	100 6	102 0

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PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, JULY 10, 1897.

[No. 15.]

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MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 16th July 1897.

Lower Pulneys. **AHTOOR, 6th July.**—*Weather.*—Rainfall for June 1'25 inches; no rain since the 19th or 20th ultimo, very hot and dry. Clouds forming up during the last day or so. No planting done yet. *Crops.*—Prices of grain have not altered. Crop prospects very poor all round, owing chiefly to unusual rainfall early in the year. *Plant-diseases.*—*Green bug:* I can't trust myself to record my opinion of this for fear of shocking the susceptibilities of your readers. *General Health.*—Has been bad during the past two months. Many coolies as well as managers down with fever. Some deaths in the lines. General health improving now however. *Labour.*—Rather scarce owing to local gangs having gone down with fever and being afraid to return to work yet awhile. *Interesting Items.*—There is a talk of the Mangalore Estate changing hands again.

Nellampathy, British.

7th July.—*Weather.*—Rain for fortnight 4'91; total for year 41'68. We have had a delightful break of about 10 days and now the rain seems setting in again. Planting is progressing on estates generally, and the last week has been "planters' weather" (far above "Queen's"!) with little or no rain during the day and nice showers at night. I was somewhat out in my last report when I said the average rain for the district in the fort-

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N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

night was 35 inches. It would be nearer 45, I think, from what I have heard. Rice, &c., very dear, 8 dingalies per rupee, gram 11½. *Plant diseases*.—In statu quo. *General Health*.—Bad, a great deal of sickness among coolies. Fever and dysentery very prevalent and Europeans on new estates not exempt. *Labour*.—Fairly plentiful; cultivation in the low country has kept back the Moplas, but they are now beginning to come up freely. Tamils nearly all up, such as intend coming at all. Maistries have mostly full gangs this year. Sorry I quite forgot about weekly edition coming out. Two tigers were shot the other day, or rather one one day and one the next, and a third badly wounded, otherwise very little game about.

Coorg.

POLLI BETTA, 5th July.—*Weather*.—Seven absolutely rainless days after the monsoon has fairly started is rather too much of a good thing. On the 19th ultimo we were favoured with a deluge amounting to nearly 6 inches in the 24 hrs. Of course it goes without saying that this sort of thing is to be deprecated, as also the monsoon drying up entirely. On the 20th a lighter state of affairs set in, which made it very favourable for planting; but on the 25th rain ceased and it continued rainless till the 3rd inclusive with the single exception of the night of the 1st instant when there was a fall of 15 cents. On the 14th there was a fresh 'burst,' which has been light so far with daily downpours not exceeding 40 cents. It is expected that it will be heavier next week. *Plant diseases*.—With the exception of some borer showing up, coffee is looking in prime condition. *Labour*.—Tamils beginning to come in. Work getting on, but there is a dearth of skilled coolies for planting, &c., in parts. *Public health*.—Fair.

Central Travancore.

PEERMAAD, 3rd July.—*Weather*.—The monsoon set in on 5th June, but first five days were not at all bad; the monsoon pucca began on 11th and from then till 22nd inclusive it poured almost continuously, no less than 51.44 inches falling in the 12 days; since that date the weather has been almost perfect, not sufficient rain for those who have new clearings to plant. Total rainfall for June 60.95; for year 74.49 inches. *Crops*.—Tea flush gradually falling off. *Labour*.—Tamil labour short, but Malayalees coming in plentifully, as rice is very dear in the low country now, consequent, I believe, on the merchants having formed a ring and holding their supplies. *General Remarks*.—Roads, as usual in monsoon, are in a disgusting state. A bridge on the Eastern Ghât over the Periyar stream has been carried away and the road is impassable for cart traffic. All rice has now to be got from Cochin. Price Rs.9 per bag.

Nilgiris.

COONNOOR, 7th July.—Raining again at last, thank goodness, for coffee, especially low coffee, wants it rather badly. Tea generally shut up, very bad go of flush worm last month. Leaf in coffee is showing up in parts. *Labour*.—Ample. *Health*.—Fair. Prices of grain getting higher every week.

KIL KOTAGIRI, 6th July.—The weather was hot up to the 3rd; on the 4th we got a small shower with clouds; since then I am glad to say it has been raining off and on all day nearly. Planting will begin again with the first large shower. Handling is started everywhere now I think; some estates that were behind with thin pruning are doing the two works as one. Coolies are coming up again, and all the estates will, I hope, have full gangs by the 15th. Shade is being cut down on all the estates or rather lopped up. The wet season we had this year has, I am afraid, done damage to all the estates, especially those under shade; there was no time to force out the spike, with the shade out I hope there will be a wet season next year. Ragi about 19 measures; all grain still dear.

S. E. Wynaad.

PUNDALORE, 7th July.—*Weather*.—In my last report I stated that when it was very hot we wanted rains and now we want the sun to shine a little to warm us, but it is hard to expect what we want from Nature. Unexpectedly Nature granted the request. There was a break from the 25th June to 4th July; it was very hot both day and night and made one to suppose that he was on the African Coasts. All planting operations were stopped. On the 5th the monsoon burst again and unceasingly pouring and overflooding the paddy fields followed by heavy winds. From yesterday the planting operations have begun. *General Health*.—Very good. *Labour*.—Excess, where ready payments are paid. *Plant-disease*.—Leaf-disease is beginning to show on the weaker plants. Liberian looking splendidly. *Crops*.—Swelling nicely and on some plants the cherry is very ripe and picking necessary. Paddy is being transplanted and the ryots are very busy at the plough. *Interesting Items*.—The *Planting Opinion* is to be published weekly instead of fortnightly as heretofore. If it copies out the telegrams and some news of the day as the *Nilgiri News*, overland weekly editions of *Madras Times* and *Mail*, I think will be a boon to some of the lowly-paid Superintendents, who cannot subscribe for those highly charged papers, and subscribers may increase if they can get a chance of weekly reading from the *Planting Opinion*.

GENERAL NOTES AND ARTICLES.

CHEMISTRY AND MECHANICS OF CULTIVATION

THIS subject, if followed in all its ramifications, covers nearly the whole course in agricultural chemistry, as well as a short treatise upon simple mechanics. We will not be so ambitious as to attempt to deal with it in its entirety, but merely purpose to review a few salient points as briefly as compatible with lucidity.

In a recent lecture by Dr. W. C. Stubbs before the American Agricultural Association, the lecturer sets forth how intimately the agriculturist has to concern himself with the operations of the two great series of ever acting forces in nature, the constructive and the destructive. These forces are gravity, heat, water (alone, as a vapour, liquid or solid), water charged with carbonic acid, oxygen of the air, chemical affinity, vitality and a lower form of the same, i.e., ferments. Insignificant in themselves, these forces have produced all the changes in the earth's surface and are still acting with undiminished intensity. The internal heat of the earth, the deposition by water of rock material, solidified by pressure, and other causes are but in the process of rock-making. As soon as rock appears the destructive powers of nature attack it, so as to render it suitable for the support of plant life: first lichens, then mosses, grasses and weeds, and finally shrubs and trees. At the same time, moving water is constantly at work transporting much of this material at lower levels. As soon as enough alluvial matter is deposited, rock-making begins again by pressure. This transformation is first exemplified

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in the hard pan which occurs underneath nearly every soil which is cultivated with shallow implements.

Our first and primary object is to arrest this tendency to rock-making, to open up the first 12 or 18 inches of soil to the disintegrating influences of air, water and vegetable matter. The larger and deeper the roots of our crops, the more effectively they work towards this end. But to enable these deep roots to develop, the soil must be deeply broken up. For the soil is their home; therein they must find their food, their drink and their air. Without air and water the rock dust will not yield up its stores. So that the amount of soluble food available is largely determined by tillage.

Another object in breaking or inverting soil is to destroy weeds or grasses and relieve it of the foulness of excess of vegetable matter. Yet another is to control moisture. To support our crops, the soil must be of a certain warmth. If the land is water-logged, the consequent evaporation produces great cold. Land must therefore be relieved of excessive moisture, and this is done by draining and by so tilling the soil as to expose the greatest possible surface to the air. On the other hand, droughty soil should be kept "flat," and much drainage should be avoided. This retards evaporation and keeps the soil moist.

Soils vary immensely in their capacity for retaining water. Some will carry 51% of their weight in water without dripping, while others will barely hold 20. The former when containing 12% are too dry for successful cultivation of crops; the latter will sustain plants when holding only 1½ to 2% of water. The differences are due to the percentages of clay, silt and sand contained in the soils. The more clay, the more water held; the more sand, the less the soil can retain. As too dry a soil is as bad as too wet a soil, a true loam (mixture of sand and clay) is best adapted for cultivation as a rule. It has been found that about 50 to 60 per cent. of the water-holding capacity of every soil is the amount best adapted to rapid growth.

So much for the physics, the chemistry and the geology of breaking soils.

If this work has been intelligently performed, subsequent planting and cultivation are simple processes. If badly performed, tilth as well as cultivation proper should be kept in view. By "tilth" is meant the best conditions for the growth of crops. It should be obtained if possible before planting, so that the after cultivation is purely one of culture, that of the maintenance of tilth.

Cultivation is too often regarded as a process of destruction of weeds and grass, and is resorted to only for such purposes.

True cultivation should look only to the preservation of tilth which a proper preparation of the soil has established. It involves only two principles—the maintenance of the most rapid rate of nitrification and other chemical changes, and the conservation of the proper amount of moisture. Nitrogen is the most costly of the ingredients of plant food. It is also the most fugitive. It is derived chiefly from organic matter which, by a process of oxidation, is converted into nitric acid. The salts of nitric acid are extremely soluble, and, if not utilized at once by growing plants, is washed out by heavy rains. Hence there is a gradual development of nitric acid during the period of growth of plants, and the process by which this oxidation

of organic matter into nitric acid is accomplished is called nitrification.

This oxidation is going on in every fertile soil, and when stopped, even though the soil may be rich in vegetable matter containing nitrogen, the plants thereon must also stop their growth. What is necessary for nitrification? (1) Organic matter containing nitrogen; (2) a certain amount of moisture; (3) a free access of air; (4) a certain temperature; (5) a mild alkali with which the nitric acid can combine when formed; (6) the presence of minute microscopic organisms or ferments. With these conditions fully maintained, nitrification is most rapid and effective, and the growth of plants is just in proportion to its rate. It can, therefore, be readily seen how cultivation tends to maintain the proper conditions for rapid nitrification. Many beneficial effects of cultivation can now be easily explained. We cultivate shallow, because such a process not only prevents destruction of roots of the plant—an *evil always to be avoided*—but also because nitrification takes place in the upper layers of the soil, and by the act of cultivation the ferment is well scattered. Again the temperature at which fermentation is most active is about 90 deg. to 110 deg., and this temperature obtains in the upper layers of the soil. The action of the ferment is suspended at or about 50 deg. and 150 deg. It is destroyed by high heat and electricity; hence when lightning strikes a soil, nothing will grow where struck for some time afterward.

The presence in small quantities of lime highly favours nitrification. Moisture in excessive quantities excludes the air and suspends the vital activities of the ferment; hence the necessity of drainage. The absence of moisture is equally as objectionable, and here the second object of cultivation promotes the first.

From these considerations it will be seen that frequent cultivations, provided no roots are cut, are favourable to rapid nitrification. Soils cultivated daily produce better than the same soils cultivated weekly, and the latter better than those cultivated less frequently.

Besides the beneficial effects of rapid nitrification, other chemical changes of great practical value are induced by shallow and frequent cultivation. The soil is a great laboratory, and the chemical changes taking place there are complex and continuous, and frequent stirrings accelerate these changes and give increased available plant food. Stir the soil if possible always after rain, but never while still wet, as this latter destroys rather than aids the ferment of nitrification.

The second object in cultivation is to conserve the moisture. On the approach of a drought, very shallow and almost continuous cultivation should be practised. A layer of finely divided soils thus made checks evaporation just below the surface. Again, finely divided soils have the power of absorbing hygroscopic moisture from the air (from 1½ to 23 per cent.), which is important in a prolonged drought with heavy dews at night.

In conclusion, all soils are comminuted rock particles, and must be broken and exposed to the disintegrating agents, to prevent incipient rock-making, to furnish easy permeability to roots, and to yield soluble food for the plant.

Cultivation should look only to the maintenance of tilth and moisture, and should be practised frequently. The instruments to be used depend largely upon the character of soil used.

Labour in Native States.

The position of planters in certain Native States is rapidly becoming most critical. To such straits are they reduced that we are given to understand that a certain Travancore firm imported a large number of famine coolies, agreeing to pay their expenses both ways, for a contract term of working of only five months. Despite these liberal terms, a large proportion of these "famine" coolies bolted away back to the fostering care of a seemingly over-generous Government.

A New Chlorophyll Theory.

At a recent meeting of the Academy of Sciences, M. Etard communicated a note on chlorophyll. As the result of a prolonged chemico-biological research upon the relations of chlorophyll-bearing organs, he has demonstrated that of different species of plants each has various chlorophylls differing from the chlorophylls of other species. Every plant, says M. Etard, requires a certain number of chlorophylls to hold captive the heat and light rays by means of special "bands of absorption," which select for every molecular change the particular heat and light waves that suit them.

Ceylon labour supply.

There is no doubt that this question is of as great interest to India as to the Island: for if the 100 thousand more coolies that are required within the next two or three years are obtained, it may have momentous effects on our own supply. And not only will it affect that, but indirectly the markets for plantation produce generally. As the local *Times* points out, the estimated labour would be sufficient to bring into cultivation tea land enough to produce an extra 30 million odd pounds of tea. And besides the plantation coolies, a keen competition arises in the P. W. D. Roughly, Ceylon, which now employs about 200,000 plantation coolies, wants another 150,000 for all its needs, and that very soon.

Cacao profits.

A very general impression prevails that cacao, though fairly sure, is by no means to be compared with coffee or tea as a paying investment. Yet we are assured that, in Ceylon, granted suitable land and a good jaf of plant, returns of from 12½ to 18 per cent. can be reasonably expected on the capital invested. And this, it must be remembered, is with crops of 2 to 3 cwt. only per acre with an average price of 68s. per cent. As regards "pests," for the first ten years of its existence there is no more troublesome tropical product than cacao to tend and foster. After that age, the West Indian experience is that very little in the way of disease or insect attacks may be feared, though in Ceylon no marked immunity seems to obtain even then. It is generally conceded that the best, i.e., the hardiest, varieties are those known under the name of forasters.

A contrast.

Ceylon enjoys the distinction of being the most pushing and successful of all our plantation colonies. More than any other colony or dependency in the British Empire does the prosperity of this Island depend on the position of its planting industry. In a long and genial speech at the recent Old Colonists' Dinner, the Governor contrasted the position of the Island in 1837 to what it is now with telling effect. The population then was only 1¼ million, it is now well

over 3; the revenue was under 3½ million rupees, it is now 21; the imports were only 5 million rupees, they now amount to 77. Of roads there were only 240 miles, now 3,500; of schools only 35, now 3,900; of hospitals now 65.

A grand record of prosperity, which H. E. the Governor frankly owned was due almost entirely to the perseverance and ability of the great planting community of the Island. If it were possible to collect comparative statistics of scattered planting districts of India, North and South, we doubt not in the least that the record would be well nigh as striking.

The Wright Subscription Fund.

Mr. J. W. Minchin writes from Ootacamund on the 5th inst. as follows:—

An account has been opened at the Bank here in the joint name of Mr. Henry Wapshare, of the Ouchterloney Valley, and myself, and we will disburse the money as may be necessary for the family. The following subscriptions have been made—amounting Rs.398-8-0—and some gentlemen are giving an allowance monthly for the support of the family. The R. C. Mission have most liberally offered to take charge of some of the children, and there is prospect of the three eldest being provided for.

Subscriptions collected for the Family of the Late Adolphus Wright of Wynaad.

	RS.	A.	P.
Mr. D. C. Rozario, Goodalur	...	...	5 0 0
Ahmed Khan	...	...	2 0 0
Mr. Penn	...	...	3 0 0
Aboosait	...	...	2 0 0
Sundry Native Gentlemen	...	...	11 8 0
Mr. Frank deRozario	...	...	5 0 0
" J. Burrows	...	...	5 0 0
" J. M. Rodrigues	...	...	5 0 0
Messrs. Pereira and 3 Brothers	...	...	3 0 0
Mr. A. H. Burby	...	...	2 0 0
" J. Freeman	...	...	1 0 0
" J. H. Gonsalves	...	...	2 0 0
" E. deRozario	...	...	10 0 0
" deSilva	...	...	5 0 0
" Duke Norman	...	...	5 0 0
" H. N. Gilbert	...	...	5 0 0
" Mincing	...	...	20 0 0
" Alexander Wright	...	...	50 0 0
" G. Hamnett	...	...	10 0 0
" H. Tremenheere	...	...	30 0 0
" G. Oakes	...	...	25 0 0
" J. C. Large	...	...	10 0 0
" L. C. Liebenrood Rs.5 per month.	...	...	...
" H. Wapshare	...	...	35 0 0
" Colin Paterson	...	...	15 0 0
" Rozario, Vizag	...	...	5 0 0
" James Stanes	...	...	25 0 0
Hon. H. P. Hodgson	...	...	20 0 0
Sir Henry Bliss	...	...	50 0 0
Mr. J. H. Sinclair	...	...	12 0 0
Mrs. W. Graham McIvor to 5th July 1897	...	...	20 0 0

Rs. ... 398 8 0

Chemistry of Cacao.

Several varieties of *Theobroma Cacao* are indigenous to South Africa and are cultivated in the East and West Indies, and parts of Africa and Australia. Each fruit pod (8-10 inches long) contains 30-40 seed imbedded in pulp. This must be fermented to allow of isolation of seed, and much depends on the way this is done. The beans are then dried and rolled very carefully. The brush is then separated, and the resultant kernel are known as cacao nibs. These contain about 50 per cent. of fat or cacao butter; 12-14 % albumenoids; 8-9 % cellulose; 2-3 % of starch, and ap

able quantities of sugar, gum, tartaric acid, and 'cacao-red', this last resulting from the oxidation of the annin. Far less tannin is present than in tea. The most important ingredient is the cacao-alkaloid theobromine (1 to 4 %) which chiefly gives the stimulative and refreshing properties. It is a white powder with a very bitter taste, markedly poisonous in large doses, and is closely allied to caffeine and theine, acting as a stimulus on the heart and as an excitant on the nerves. Cacao also always contains a certain minute proportion of copper.

Being so "fatty" it cannot be simply ground into powder. There are two methods of preparation which yield (1) essence or extract, (2) ordinary cacao and chocolate. In the first method the material is warmed and part of the fat is separated by pressing it out when melted. In the second process the crushed nibs are "diluted" with sugar and various flours. The essence or extract is more wholesome, by virtue of the removal of the fat, than the powdered cacao or chocolate. Alkalies are added in the latter cases to prevent the appearance of oily globules on the surface of the prepared beverage.

Cacao is certainly more nutritious than tea, but as a rule this is due to the large percentage of flour starch and sugar that it contains. Cacao butter is a valuable bye-product much used by chemists, and in the preparation of expensive soaps. The husks themselves are used in Germany, and a little in England, like tea.

COMMERCIAL NOTES.

THE *London Commercial Record* of 18th ultimo is responsible for the following:—

According to telegraphic advice from Bombay, the West Coast of East India has at last been visited by the Monsoon. On the 15th inst. rain set in in real earnest, 3in. being measured in Bombay and no less than 7in. in the Calicut districts. This practically brings the Indian season, as far as Mincing Lane produce is concerned, to an end. Very few will regret the termination of a season which has proved most unsatisfactory to all—with the exception of dealers in Pepper. Opening under the most promising auspices, the hopes of those interested in that part of the world were raised to an unusual height, only to be dashed to the ground by the appearance of the famine and the plague. Instead of brisk business, originated by small crops and stimulated by good trade and speculative demand, we have, on the whole, witnessed a slow, dragging market in produce from the West Coast of India. Pepper alone, as we intimated above, made a praiseworthy exception, hardly, however, on its own merits, but in consequence of the unsatisfactory position of Singapore Pepper. Unusual activity prevailed in Tellicherry black, in fact more so than we have ever witnessed here before, and the most extraordinary feature of the movement was not only the demand of Continental agents, who might have been sent into our market to effect a coverture of some Continental bear, without disturbing the particular market of that speculator, but also the strong request in which this usually much neglected Pepper stood on the part of home consumers. We hear that experiments have been instituted with this Pepper with a view of trying its efficiency as a substitute for Singapore Pepper, and we have been given to understand that these experiments have proved highly satisfactory, and that in future we may look for a fresh demand for this description. A great point in favour of this Tellicherry black Pepper is apparently the uniformity of its quality which should be of immense value to the consumer to whom an allowance is not always adequate to the loss he sustains by inferior tenders. We hear that not one allowance has been awarded on all the stuff delivered, which up to the end of April amounted to 76,115 cwts., shipped to Europe. The following comparative figures may be of some interest to our readers. Exports of Tellicherry Pepper from the three most important ports, Tellicherry, Calicut and Cannanore:—

1895			To India.	To Europe.
Jan.-March	...	...	14,438	6,957 cwts.
April	...	...	1,567	10,434 "
			16,005	17,391 "
Total 33,396 cwts.				
1896			To India.	To Europe.
Jan.-March	...	...	28,433	10,109 cwts.
April	...	...	2,778	12,615 "
			31,211	22,724 "
Total 53,935 cwts.				
1897			To India.	To Europe.
Jan.-March	...	...	14,109	48,933 cwts.
April	...	...	4,692	27,182 "
			18,801	76,115 "

Total 76,115 cwts., or an increase of 58,724 cwts., in the exports to Europe in 3 years. Business in this Pepper has now come to a standstill not in consequence of a diminished demand on the part of Europe, but owing to the obstinacy of Indian dealers and planters, who, frightened at the strong demand emanating from a part least expected, have withdrawn from the market and are doing their utmost to secure as much as they can of the available stuff in order to store it away to meet the requirements of Europe which are confidently expected in the next season. The outbreak of the monsoon greatly facilitates their endeavours. With the alarming decline in the supply of Singapore Pepper we think it highly probable that the anticipation of the future of Indian Pepper will be realised. The question is whether the good supply of the latter will not materially interfere with the hopeful anticipations of holders of black Singapore, or will black Singapore in time become such a rarity that it will demand fancy prices? We doubt it. About other produce of the West Coast of India now practically excluded from our market we shall have an opportunity to speak next week.

The Mungledye Tea Company reports increased crop but reduced prices. The amount at credit of revenue, viz., £344, is just enough to pay the dividend on the preference shares, on which an interim payment of 3½ per cent. was paid in December last, and it is now recommended that a final dividend of the same amount be paid.

The Assam Company shows in its 1896 accounts a net profit of £43,294, which, with the sum brought forward, gave a total of £44,160 available for distribution. Out of this an interim dividend of 5 per cent. was paid in January last, and it is now proposed to declare a final dividend of 15 per cent., making 20 per cent. for the year, and to add £5,000 to the reserve fund, leaving £1,728 to be carried forward. With a capital of £187,000 this Company has over 10,000 acres under cultivation. All its gardens are fully equipped with buildings and machinery which has been paid for out of revenue.

The Jokai (Assam) Tea Company's report states that the actual outturn for the past season was 3,466,609lb., against an estimate of 3,232,000lb., being an increase of 234,609lb. on the estimate and of 357,936lb. on the actual growth of the previous year. This large increase in quantity was not made at the expense of quality, but was the result of good cultivation and young tea coming into bearing. The average gross sale price per pound was 10.79d, against 10.51d last year, being an increase of 0.28d per pound. The average sale price of all Assam garden teas disposed of in Mincing Lane during the season was 10d, and of all Indian teas 9d per pound. The area of mature plant plucked was 6,185 acres, showing a yield which averaged 560lb. per acre; the cost of production per pound f.o.b. Calcutta was 8.53d, and, laid down in London, 8.87d per pound, inclusive of all home charges and commissions. The gross profit on the working of the season amounts to £33,046, and after deducting for commission to managers, &c., and for income-tax £5,642, there remains a net profit of £27,403, which is carried to profit and loss account; adding to this the balance brought forward and other profit and loss items there is a total amount for disposal of £30,179. The board recommends a final dividend of 5 per cent., making a total dividend of 10 per cent. on the ordinary share capital for the year, leaving a balance of £2,179. The estimates of expenditure, &c., for the current year indicate a crop of 3,666,000lb. of tea, for an outlay in India of Rs.15,15,700, or at 1s 2½d exchange, £97,615, and with £28,385 for English charges, makes a total of £126,000,

being an annual cost of 8-25d for laying down the tea in London, including all charges but commissions.

The Borjan Tea Company's report states that last season's crop was 136,278lb., and the average price 9d per lb., as compared with 113,371lb. and an average price of 10 $\frac{3}{4}$ d per lb. in 1895. The profit on the season, after deducting manager's commission, is £345, and with the amount brought forward makes a total of £894. The directors recommend a final dividend of 3 $\frac{1}{2}$ per cent. on the preference shares and of 4 per cent. on the ordinary shares, leaving a balance carried forward of £36. The directors have arranged to plant out an addition 200 acres during the present and ensuing seasons on the company's grants. To this end it has been decided to at once issue £2,000 fresh preference capital, and such further sum as may be found necessary for the upkeep of the above area till maturity.

A new departure on "Pearce and Plenty" lines is contemplated, the prospectus having been issued of the *British Tea Table Company, 1897 (Limited)*.—Capital £300,000, in £1 shares, half of which will be called Five-and-a-Half per cent. Cumulative Preference Shares. It is proposed to amalgamate the businesses of two companies, viz., "Pearce's Dining and Refreshment Rooms (Limited)" (more popularly known by its registered trade mark, "Pearce and Plenty") and "The British Tea Table Company (Limited)." It is to be hoped the Company will succeed in stimulating demand for Tea—Indian Tea in particular.

U. P. A. S. I. LEAVES.

(GATHERED BY THE SECRETARY, U. P. A. S. I.)

SOME interesting correspondence that has passed between the Madras Government and the Commissioner of Agriculture, Hawaii, is published in the *Madras Mail* of 3rd instant together with a brief G. O. The subject is "Scale Pests and Lady Birds," which was brought to the notice of the U. P. A. last year by Mr. Howard O. Newport, Honorary Secretary of the Lower Pulneys Planters' Association. At the Annual Meeting in 1896 a resolution was passed requesting the Madras Government to take this subject up with a view to securing for the benefit of this Presidency the services of Professor Koebele, who has greatly distinguished himself in Hawaii by his campaign against scale insects. It was thought that he might be of great assistance to coffee planters by investigating the scale pests that attack the coffee shrub in India.

Writing to the Commissioner, the Government of Madras asked for information on the following points:—

(1) as to the results obtained from the experiments which have been conducted,

(2) as to the approximate cost of obtaining a consignment of lady birds for experimental purposes in Madras and the source from which to procure such a consignment, and

(3) as to whether Professor Koebele could arrange to visit Madras for a short period for the purpose of investigating the insect pests which cause damage to coffee in the Madras Presidency.

Should Professor Koebele consider such visit to be practicable, what salary and allowances he would consider sufficient remuneration for his services and on what conditions he would undertake the visit.

The Commissioner of Agriculture and Forestry, Hawaii, replied as follows, under date Honolulu, 3rd March 1897:—

Your communication, dated the 14th November, 1896, in which he makes certain enquiries concerning the entomological work of Professor Koebele was duly received. I have delayed answering your letter until I could communicate with Professor Koebele who had departed from these islands on a mission to Mexico and Central America, in search of beneficial insects to send to this country. I can offer you no encouragement that Professor Koebele's services

will be available for the Madras Government, at least for two or three years to come, as he is under an engagement to this Government and to the Hawaiian Sugar Planters' Association, each paying one-half of the salary and expenses. The salary paid to the Professor is \$3,000, or six hundred pounds sterling per annum and all travelling expenses. Your first question, as to the results obtained from the experiments which have been conducted, I beg to answer as follows:—Before the engagement of Professor Koebele, the vegetation of the Hawaiian islands was sorely infested by numerous coffee or scale insects, which were so destructive that any industry, except sugar growing, seemed impossible. Particularly were the coffee trees infested with a terribly destructive scale insect (*Pulvinaria psidii*). The tree could not ripen its fruit, the berries turned black and dropped off long before they became ripe. *Tetranychus telarius* (spider) was also present as well as several other destructive scale insects infesting coffee trees. The outlook for the coffee planter was gloomy indeed, and no one had the courage to start a new plantation, although it seemed but a question of a short time when the industry would cease to exist in this country. Now, all is changed, the coffee trees are free of scale pests and blights, and new plantations are being started all over the islands. This wonderful change has been accomplished by the introduction in this country of the natural enemies of the scale pests that were present. The work of finding these natural enemies and sending them to this country was entrusted to Professor Koebele, and well has the work been done. The Professor has sent us beneficial insects from California, Australia, Ceylon, China, Japan and these keep our vegetation practically clear of scale pests. The Professor is now on a mission to find and send to us parasitic and beneficial insects for cut-worms and caterpillars that are injurious to sugar-cane, pastures and garden produce.

Question (2) as to the cost of obtaining a consignment of lady birds for experimental purposes in Madras and the source from which to procure such consignment.—The cost of such a consignment should be but trifling—an experienced collector can collect many hundreds of lady birds in a day. The method of packing them for shipment is to place the lady birds in small, practically air-tight wooden boxes in which some slightly moistened moss has been placed; the boxes should then be wrapped in oil cloth so that no outside moisture can penetrate to the boxes. In order to safely carry the lady birds on journeys of over one week's duration, they must be carried in a temperature of between 30 and 40°F.; this temperature can be found in the cold storage or ice room of all passenger steamships. If transshipment from one steamship to another is required on the journey, a trustworthy agent should be on hand to make the transshipment without delay, for if the lady birds are once thawed out it is fatal to make them cold again. In this manner they can be safely carried on journeys occupying from one month to six weeks. As to the source from where to procure the lady birds, I am afraid that my advice will be of little service to you as I am not familiar with the coccids or scale insects affecting the vegetation of Madras, if there are any of the *Dactylopidi* present, the *Cryptolaemus montrouzei* will surely feed on them. Australia is the nearest country that can furnish that valuable lady bird as well as many other useful coccinelladae. China and Japan also have many indigenous species, some of which have proved of great value to these islands. I would strongly advise against the wisdom of relying on the importation of only two shipments of lady birds and judging from the effects of the importations as to what can be accomplished in this branch of applied entomology. There are over 1,700 different kinds of coccinelladae lady birds catalogued and probably many hundreds yet undiscovered and all are, with very few exceptions, coccid or scale feeders, such as the *vedalia cardinalis* will feed only on one scale, while others, such as the *Cryptolaemus*, will feed on several. In order to obtain the results, all countries within reach of a month's or six weeks' journey should be explored for the beneficial insects they can furnish, the work should be entrusted only to a skilled entomologist, one who has made the life habits of beneficial and injurious insects a special study. While all countries have their beneficial insects they also have those that are injurious, and if the work of collecting is done by a person not thoroughly competent, injury instead of benefit might result.

As to whether Professor Koebele could arrange to visit Madras for a short period for the purpose of investigating the insect pests which cause damage to coffee in the Madras Presidency.—In reply to your question I beg to say that I have communicated a copy of your letter to Professor Koebele and in reply he writes that he feels himself bound to the service of this country as long as we may require

am about to visit the United States and shall be absent from these islands for three months. During my trip I shall visit some of the United States agricultural experimental stations and shall meet several entomologists of established reputation; among them I may find one who would be willing to undertake the work of searching for and introducing beneficial insects to Madras; should you desire to learn the result of my enquiries I shall be glad to send the same on receipt of a request from you.

I have mailed to you under separate cover one copy of the *Planters' Monthly* for December, 1886, containing a Report on insect pests. Two copies of the *Planters' Monthly* for February, 1897, containing the Report of the entomologist of the Hawaiian Government. Three copies of the Reports of the *Minister of the Interior* containing the Reports of the Commissioner of Agriculture and the Government Entomologist. One copy of the *Pacific Commercial Advertiser* for the 27th February, containing an article entitled "The Coffee Outlook."

Upon this, the Madras Government has passed G. O. No. 351, Revenue, dated the 18th May, 1897:—

The following letter acknowledging the receipt of the second of the papers read above and stating that the question of employing an entomologist from the United States cannot be decided until after the receipt of definite proposals from the Planters' Association, will be sent to the Commissioner of Agriculture and Forestry, Honolulu.

It remains now for the U. P. A. S. I. to formulate the definite proposals that are here invited. No doubt the matter will come up for discussion at the Annual Meeting next month.

The British Consul-General at Antwerp has raised the question of giving out a market for Indian Coffee in that place.

The Madras Government has received an intimation from the Government of India that the congratulatory Address received from the U. P. A. S. I. will be duly transmitted to Her Most Gracious Majesty.

PLANTING PRODUCTS IN CEYLON.

The following extracts are from the report of the Ceylon Botanic Gardens and will be found of interest:—

Tea. The year has been favourable to this crop, the export once more being the largest on record. It exceeded 108 million pounds, an increase of almost 11 million pounds over 1895. The area under tea cultivation continues to increase, though more slowly than in previous years. The average price has been lower (about 8½d per lb.) and exchange higher—two circumstances tending to check extension.

The tea plant seems admirably suited to the poor soil of Ceylon, and is also remarkably free from disease; this is probably in great part due to the tannin in the leaves. It will not do, however, to assume too great permanence for this immunity. Tea being a leaf-crop stands manuring well, and this is a great circumstance in its favour; the use of manure appears to be steadily increasing.

The tea industry would appear to have about reached its zenith, and a more critical period in its history seems likely to commence, demanding the attention of planters to scientific questions as to manuring, coarse or fine plucking, methods of manufacture, rotation of crops, and so on. The increased production, and the fact that the competition is now less with the hand made teas of China than with the factory teas of India, Java, &c, will gradually render haphazard cultivation and manufacture no longer profitable.

Coffee. The export of this product in 1896 fell partly, owing to bad crops, to little more than a third of that in 1895.

The planting of Liberian coffee is apparently increasing slowly. Several kinds of Coffee are on trial in the Gardens (see section), but none show much promise of usefulness, being much attacked by leaf

disease. *Coffee stenophylla* in particular suffers from the disease. Great expectations have been aroused by the success in Java, &c., of the hybrid between Liberian and Arabian, and I hope to obtain this kind in 1897 for trial here.

Cacao. The exports show a steady increase; those of 1896 exceed those of 1895 by about 4,000 cwt.

Much anxiety was caused during the last quarter of the year by the rapid spread in Matale and Badulla Districts of a disease which has attacked the trees for some years past, increasing in destructiveness every year. The nature of the disease is at present unknown, but every effort will be made to discover its cause and to check its ravages.

The Nicaraguan cacaos referred to in the report for 1895 are now established, and some are growing well.

From the report for 1896 of Mr. Hart, Superintendent of the Royal Botanic Gardens, Trinidad, I quote the following paragraphs:—

"The 'Old Red Dutch' cacao sent at my request by the late Dr. H. Trimmen, Director of the Ceylon Botanical Department, for comparison with our varieties, proves to be synonymous with the true Criollo cacao of Trinidad, having the same form and also the same white or light-coloured seeds. The Criollo variety has however almost disappeared from cultivation, being ousted by the more vigorous growing Forastero imported from the Mainland, with which it has evidently hybridized, if the numerous varieties or intermediate forms between the two kinds now to be seen growing in every plantation are to be taken into account. On estates where the Criollo form predominates the cacao produced is of the finest quality. The origin of the colour and form of Ceylon cacao has therefore been now fully ascertained.

"I would point out, however, the direct influence for good which a change of climate, or rather a change of seed from one climate to another brings to pass. The Forastero has practically ousted the Criollo of Trinidad. The Criollo introduced into Ceylon has done well there, while the Criollo of Nicaragua will as certainly fall before the recently introduced Forastero, as the same kind has been already displaced by it in Trinidad.

"Cultivators of all kinds will always find that great benefit arises from making a change of seed from one country to another or from one district to another."

Coconuts.

The export of oil continues to fall off, but that of most of the other coconut products shows an increase. The area of land planted in coconuts is also increasing.

Rubber.

The tree of Para rubber (*Hevea brasiliensis*) which was tapped in 1894 was again tapped this year, yielding 3 lb. ¼ oz. of dry rubber, or rather less than in 1894. The yield of this tree has been 27½ oz. in 1888, 42 oz. in 1890, 45 oz. in 1892, 51 oz. in 1894, 48½ oz. in 1896; total in nine years 13 lb. 6 oz. or about 1½ lb. per annum. The tree is now twenty-one years old, and should bear tapping every year. I desire to call special attention to this yield, for many persons entertain the most exaggerated ideas of the rubber-yielding capabilities of this and other trees. Of course a much larger yield can be obtained for one or two years, but it is at the sacrifice of the life of the trees. If the results of the tapping of this tree be taken as a basis, the yield of a rubber plantation after the tenth year (fifty trees to an acre) should be perhaps 100 lb. of rubber per acre per year, worth about £12 or £13 in London. In comparing this with other products, it should be remembered that the labour cost of rubber is very small.

The cultivation of Para rubber seems likely to succeed in the low-lying wet districts of Ceylon. There seems little likelihood at present of any serious fall in the supply of rubber from wild sources, but the demand is increasing, and by the time the private plantations in the East come into full bearing, it is quite probable that the easily accessible native sources will be becoming exhausted.

Little reliable information is at present available on the subject of rubber, and I am devoting what time I can spare from other duties to a series of experiments in cultivation and tapping of rubber at Heneratgoda and Peradeniya (see above, section 3). These were commenced at Heneratgoda in December chiefly on a plantation of eleven or twelve year-old trees, which, being planted only 12 ft. apart, are now much too crowded. About 150 of them will be sacrificed in the course of the experiments, leaving more room for the remainder.

Several plants of Lagos rubber (*Kickxia africana*, Benth.) were received from Kew in 1896, but are not doing well. The species forms a stout tree, and is therefore suited to cultivation, but it will be a long time before seed is available in quantity.

LETTERS TO THE EDITOR.

ANSWERS TO CORRESPONDENTS.

["A Lover of All Truth." Not authenticated, declined with thanks. "Van Resd." With our weekly edition space is more valuable than ever, but all interesting extracts dealing with Planting will be received with thanks, especially if accompanied with remarks as to the particular manner of applying the moral thereof. "Nathal's Love." Good skit, but the tale mocked at appeared in part only by mistake; we are 300 miles off our printing office!—Ed.]

"ARTIFICIAL MANURES."

SIR,—Now that most planters are going in for the above and leaving their "old love" "CATTLE," I shall be much obliged if some or all of them will answer the three (3) following questions, because I presume they have taken to "artificial" with an object, not because Mr. So and So uses them with a certain amount of success, but that they have thought out the matter and are acting on it; so it will not be a difficult task I ask:—

- I. Does the application of nitrogenous manure produce an increased crop?
- II. In what way does an increased yield result from the manuring with nitrogenous salts?
- III. Quantity of nitrogen used?

KOLA.

BUTTER FOR PLANTERS.

DEAR SIR,—Referring to your general note on "Butter for Planters" in issue of 26th ultimo, the Managing Proprietor of the dairy seems to have exhausted all his supply of 1 lb. sample tins in sending you the same.

Twice have I written humble requests for a sample tin with the further humble request that it should be sent V. P. P.

In my first letter I held out the hope of a 5 lb. monthly order if the butter was approved of.

Can I have offended the gentleman's susceptibilities by asking that the butter should be sent V. P. P.? (I ask for I have received no answer to either letters.) If I have, I will, if pressed, take a tin free. If through your courtesy this should meet the Proprietor's eye, perhaps he might wake up to the fact that a prompt reply to request often results in a standing order, which I imagine in his case is a thing to be desired.

"PAT CLOYNE."

SHORT CROPS.

SIR,—I think it very plain that the universal short crops this year are due to one great cause—an unfavourable season—extending throughout the whole year. This unfavourable season took various forms, and had various effects—in one place inducing leaf disease from which the trees were unable to recover in time to set their blossom, and in another bringing unseasonable showers in February which checked bud and encouraged flush.

Yet again I know of estates on which both of the above causes operated only in a mild form, and the effect of short crops is due totally to insufficient blossom showers.

We have had an abnormal year altogether, and while some of us got more rain than we wanted in the monsoon, leading to leaf rot and leaf disease, others got more rain than they liked in February and others again far too little in April and May.

The great parent "Unfavourable Season" produced offspring of various makes and sizes, but all working to the same end, so that "Kola" and "Expd. Dt." may both be right, and half a dozen more, with as many opinions.

VAN RESD.

CHRISTIAN COOLIES AND PLANTERS.

SIR,—I have been following with some interest the letters appearing in *Planting Opinion* re Christian Coolies and Mis-

sionaries. Although of the same opinion as "A Much Disgusted Planter" that heathen coolies are preferable to "Kisti ones, still I am inclined to take a middle view and reiterate Crolech's query, "Do planters (disgusted or not) and other highly educated Englishmen, reared in good Christian homes, set an example of sobriety and general morality to their native servants? If they did, the Christian would be a far better man." He often is the sad spectacle of a number of planters meet together and partaking in a disgraceful drinking bout, the majority of the men present having to be carried to their homes by their own servants, or more sober friends. I care little for Christianity and look upon the converted native as a farce (of which more anon), but I do believe in upholding the prestige of the British name in India (or anywhere else for that matter). If men become unseemly inebriated and make utter fools of themselves while in this state, and live questionable moral lives, can it be otherwise than expected that their servants and those dependant upon us for a livelihood should look upon Christianity in a wrong light. How true is the proverb that "example is better than precept."

The Christian religion teaches one that all men are equal and that Christ eat with sinners and publicans; yet the converted Christian cooly will not touch the food cooked by a low caste man, nor will he so much as enter his house, neither will he carry beef "because he is of a better caste." In fact he retains all his old caste prejudices, and yet he is allowed to call himself a Christian; this is why I look upon him and his new religion as a farce.

"MIDDLE VIEW."

ECONOMICAL WORKING OF TEA ESTATES.

SIR,—Now that prices are falling and exchange on the rise it behoves those of us interested in Tea to be "up and doing" to let each other know how expenses are to be kept down without in any way allowing the estate to run down; and it seems to me that the only man who will pull through is the "cheapest worker." A few years ago any one who could earn a living at Home was sent out to "plant" more especially the Assam way; but those days are gone never to return. What was wanted in my humble opinion for a planter, and especially a Tea Planter, is a man who has had a liberal education and who possesses a fair amount of common sense to carry out orders or ideas; place that youth or man under a competent manager, have him thoroughly taught not only field and factory work but accounts as well. Keep him at work and make him a useful and practical "Tea Planter," who when his "time" comes up will be able to take charge of an estate and give his own views on the "working" of an estate (not like some of the "Creepers" are now doing in P.O., telling us how to live on Rs. 10 a month, without soap or dhoby) and who will have picked up a few dodge or two that may be worth passing on, these are the men of "Creepers" that are wanted, not the "Creeper" that will go off to every race meeting, gymkhana, a dance, etc., then coming back and going and working for "knock off" time to come and leave every mortal thing to the writer or maistry if possible, and when asked how it is the work is behind or leaf short, says: "Bad weather never turned up to-day"!! "no rain for the last three weeks hence no flush," and so on!!

Now I will try and give an example of an A-1 manager who should attend roll call as often as possible in the month so as to get to know his coolies not only by their faces but names (an important thing, in my humble opinion); visit each gang at least twice a day and allow no scamping of work, especially by the Badaga; look after small things and he will soon get use attending to the big ones; attend to coolies' complaints "practically," thereby very often finding out that your writer or maistry is trying "to do you." The careful planter will go into details before giving a contract and see what can be s

and not leave it to his writer to enter into the contract and arrange everything before going to master and thereby securing a commission from the "contractor" who must scamp the work to make a profit for himself and pay hush money all round.

Well, a "Creep" can't learn all the ins and outs of working an estate if he is not 'kept' steadily at work by the manager, for remember it is from the "Creep" that our future managers are to come. I will now shut up by saying that unless a manager can put Tea in London under 4 annas per lb. including all charges he is not worth his salt.

KOLA.

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma loppings, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.63	"	Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. Germination guaranteed.

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE.

COFFEE.

While high cultivation is eminently desirable, it is also extremely costly. We have been told of a certain Nilgiri estate that spends over Rs.300 an acre in cultivation and manuring, and finds it so profitable that even these rates are likely to be exceeded.

Nyassaland. Through oversight we have omitted to notice the report of a very interesting interview with Mr. G. M. Crabbe, a former Ceylon planter, in the *Times of Ceylon*. He returned about a month ago from Nyassaland, where he spent a year as Manager of a coffee estate at Mlanji. He was obliged to abandon his post on account of severe fever. The fever, of the dreaded Blackwater type, is a fearful scourge, and will be so for many years till the country is opened up. The elevation of the coffee districts is low, from 1,500 to 2,500 feet. The country is undulating; the rainfall about 30 inches; the temperature is cool and equable. The most unhealthy months are from November to the end of February, the planting season. Roads and communications are in a barbarous state. Labour is plentiful and the tribes gradually quieting down.

The Sandwich Islands. Consul-General Hawes has sent home a report from Hawaii on the situation and prospects of coffee cultivation in these islands. In a notice thereon by a contemporary, the *Madras Mail*, the chief points of interest touched on are as follows: The industry is of recent origin but, despite the usual pioneering failures, has progressed in a remarkable manner. The soil is volcanic and extremely rich. There is a vast area fit for coffee from 500 to 2,500 feet, with a westerly, sunshiny

aspect. Rainfall varies from 75 to 200 inches and seasons fairly regular. Temperature rarely exceeds 85° in the shade. The natives are lazy and unreliable, and Japanese and Chinese are preferred, but are as yet scant in numbers. Contract labourers receive 12½ dollars and free labourers 15 dollars per month, far higher than the rates obtaining in the East. The "lay of the land" is easy, with gentle slopes. The yield is stated to be enormous, being from 1 to 2 lbs. per tree, the latter only if suitably cultivated. Roads are being opened up rapidly. The Kona District especially is eminently favourable for coffee: rarely stormy, rich soil, moderate rainfall and regular seasons. Kona coffee yields the unusual proportion of 12 to 15 per cent. of pea-berry.

There follows the inevitable and not always reliable estimate. To establish and maintain a coffee tote of 75 acres for seven years costs as follows: 100 acres of Government land \$1,000. Manager's salary at \$1,200 per annum. The labour details are curious: "six Japanese are employed in the first two years, nine in the four following years and twelve in the seventh year. In the third year the crop is estimated at 20,000 lbs. = \$3,600; fourth year 60,000 lbs. = \$10,800; and fifth year 85,000 lbs. = \$15,300. This clears all working expenses up to date. Sixth year 100,000 lbs. = \$9,985; seventh year 125,000 lbs. = \$11,680, when the profits should have totalled up to \$21,000. The estimate is said to err much on the side of caution.

The Market. The lower range of prices, says the *P. M. Review* of 12th ultimo, is evidently leading to an increase in the consumption in other countries, although there is not much evidence of any improvement here. Such an inference can be drawn from the deliveries for the first five months, which in Europe have amounted to 182,830 tons against 166,410 tons last year, while the world's deliveries are given at nearly 300,000 tons for the same period, or an increase of fully 50,000 tons. The stocks during May have, in consequence, shown a reduction, the world's supply being about 7,000 tons lower: the total, however, is still 247,780 tons against 147,360 tons last year. The future of prices still rests mainly on the outturn of the coming Brazil crop, and judging from the latest reports, there is no indication of a short crop which would lead to an advance in the lower grades. At the auctions, which recommenced on Thursday, there was a very slow demand, except for the finer kinds which sold at very full rates.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended June 5, 1897.	Tons. 361	Tons. 310	Tons. 748	Tons. 627	Tons. 14,323	Tons. 12,354
For the 22 weeks ended June 5, 1897.	6,614	6,608	8,942	10,364	...	...

The course of the market during the last four weeks, says Messrs. Arbuthnot & Co.'s monthly London report of 11th June 1897, has been marked by a tone of general flatness,

and the large proportion of the less desirable grades has contributed in a great measure to this result, as the market for such qualities is influenced by the decline in Rio and Santos. As a whole we must quote a reduction of 2 to 3 per cwt., exception being made in favour of the comparatively limited supply of good middling and colory qualities for which the value has been well maintained.

There have been occasional fluctuations in the market for futures, but the general tendency has been to easier prices as the receipts in the Brazils continue heavy and to the present date amount to 8,333,000 bags against 5,189,000 bags last year and 6,467,000 in 1894-95.

We quote as under :—

		S.	S.
Neilgherry B size	...	87/- to	98/-
Wynaad	...	82/-	90/-
Coorg	...	86/-	97/-
Travancore	...	84/-	90/-
Plantation Ceylon mid to good mid	...	103/-	112/-
Java in Holland good ordinary	...	46½ cents.	
Good average Santos London Sept.	...	38/-	
Good average Santos Havre Sept.	...	48 francs	
Mysore B size good mid to fine	...	94/- to	106/-

BRAZIL.

A large estate.

THE largest coffee estate in Brazil, we learn from the *American Grocer*, comprises 110,000 acres, of which 13,000 acres are planted with coffee, and 20,000 more are suitable for coffee trees. This plantation was sold to an English syndicate for \$5,838,000.

The United States Vice Consul at Santos furnishes the following statement of the trees in bearing and of the yield and profits from 1892 to 1895 and estimated profit for 1896 :—

Year.	Coffee trees in bearing.	Yield, pounds.	Profit, dollars.
1892	... 1,300,000	3,897,600	269,895
1893	... 1,400,000	4,200,000	349,645
1894	... 1,500,000	5,107,000	432,946
1895	... 2,069,700	8,400,000	637,266
1896	... 2,476,500	9,000,000	*711,133

* Estimated.

The total number of trees in this plantation was in June 1896, 4,426,604, of various ages, including 194,000 planted in October and November 1895, and it is estimated that two-thirds of the trees being new, from 1897 on an average harvest of 100,000 bags (13,200,000lbs.) may be expected, and that, when all the trees will have arrived at an age of three or four years, the yield may increase to 250,000 bags of coffee, or about 32,500,000lbs. per annum.

The next largest estate is owned by Carlos Schmidt, who arrived in Brazil from Germany some thirty-five years ago. The area of his property is 9,785 acres with 1,800,000 trees populated by nine colonies with 260 families furnishing some 1,500 labourers. There are several other plantations on which grow more than 1,000,000 coffee trees.

European Capital.

The introduction of European capital into Brazil for the development of the coffee enterprise will be especially useful at this crisis in the financial position of the country. The low prices received for coffee have greatly reduced the income, and in consequence of this the balance of foreign payments has become still more heavy against Brazil, and the planters are greatly embarrassed in meeting their obligations within the country. All this helps to diminish commercial transactions in Brazil itself and in turn reduces the volume of importations. It also cripples national industries and diminishes the demand for labour. The Treasury likewise feels the contraction, for diminished imports and lower prices for coffee lessen the revenues. Last year it is estimated that not less than fifty thousand contos of gold (say £5,000,000 to £6,000,000) were lost to the country by the fall in

coffee prices, which reduction will be greatly increased this year by the still lower prices. The increased prices for rubber and sugar will counterbalance this to a small extent, but it is highly improbable that it will reduce the total loss for 1896 to forty thousand contos of gold (say £4,500,000). Under these circumstances the recent large sales of coffee estates to European syndicates may be expected to favourably affect the future of the country.

Crops.

Brazil coffee has dropped to the lowest point since 1886. The decline within one year has reached 6 cents per pound, and is due to increased supply throughout the world. The full benefit of the lower prices has been given to consumers, largely through the war between coffee roasters.

The result of lower prices is an increased consumption, which, the first nine months of the trade year, shows an increase over the previous year of 362,163 bags. Retail grocers testify to a marked increase in their coffee trade during the past three months, which statement is supported by the Coffee Exchange report of 1st April which shows deliveries for the past five months, as compared with the season, as follows :—

	1896-97.	1895-96.
	Bags.	Bags.
November	445,222	342,721
December	414,434	319,740
January	468,915	424,646
February	423,857	365,134
March	469,205	426,036

The above is a gratifying statement and indicates that once more we may look forward to a period when consumption will steadily increase from year to year, as was the case in the former era of low prices.

The following statement reveals the position and movement of coffee during March :—

	Bags
Stocks in United States 1st March	504,800
Receipts in March	564,068
Total supply	1,068,868
Less stocks 1st April	599,566
Distribution during March	469,205

Of the above 356,939 bags were of Brazil sorts and 112,266 bags all other sorts.

The combined movement in Europe and the United States was as follows :—

	Bags
Stocks on 1st March	2,436,050
Receipts in March	1,455,170
Total supply	3,891,220
Less stocks 1st April	2,801,520
Distribution during March	1,086,690
February	967,600
January	975,800

The world is absorbing 1,000,000 bags per month and stock is increasing. The visible supply of the world on 1st January was 4,024,968 bags against 3,552,792 bags at same date last year. On 1st April, 4,181,529 bags against 2,634,670 bags on 1st April 1896, an increase in one year of 1,546,859 bags—sufficient reason for a drop in prices. The question now is: Has not the decline gone far as the position of the article warrants? It certainly is not to take the "bear" side on coffee.

The receipts in Rio from 1st July 1896 to 1st April 1897 were 2,910,000 bags and in Santos 1,503,000 bags, or 1,420,000 bags more than the total crop in 1895-96. The total receipts in Rio and Santos for nine months of 1896-97 were 7,413,000 bags, or 1,937,000 more than the total crop of 1895-96 and the largest receipt record, exceeding the 1891-92 crop by 16,000 bags, with the months' record to be added.

An era of cheap coffee has been entered upon. Extreme low prices will check new planting enterprises, but we must bear in mind that 1896-97 marks the first tangible results of the last five years' extension of the planting industry.

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.,
SOMETIME AGRICULTURAL CHEMIST IN COORG, SOUTH INDIA,
TO MESSRS. MATHESON AND CO.,
(Reprinted from the "Madras Mail.")

NOTE.—These papers are being published in pamphlet form: register orders with Messrs. Addison & Co., Mount Road, Madras.

V.

DRAINAGE.

(Continued.)

In the last paper I gave the more important physical and physiological reasons for recommending deep drainage, and showed that the object of drainage was not merely to carry off the surplus water, but to get the rain and air into the land; to bring it into a finer physical condition; increase its power of capillary attraction, so rendering plants grown on it better able to resist drought; to fully oxidise the decomposing organic matters present, also the iron salts, rendering them valuable as plant food; to prevent loss by surface wash, not only of the soluble salts brought to the surface by capillary attraction as the water is evaporated off, but of the finer particles of the soil also; and to bring the nitrogen of the air within reach of the nitrifying organisms of the soil, and so allow the plant to obtain from the air some of the nitrogen it requires. Where the land is thoroughly drained all these results are obtained, and only such substances as are in excess are removed by the rain in its passage through the land. Having briefly sketched the reasons why drains are required, we have now to consider how best to drain the land. The depth of the drain is of the greatest importance. Shallow drains, gutters, merely carry off the surface water and leave the subsoil chilled and saturated; they fail to do more than direct the course of the surface water. Mr. Parkes, Engineer of the Royal Agricultural Society, examined before the Committee of the House of Lords in 1845, stated that land should never be drained to a less depth than three feet, and four feet is preferable whenever an outfall can be obtained, at which depth it will rarely occur that drains need be placed nearer than 33 feet asunder. Deep drains work by means of the fissures caused by cracks in the soil; these cracks do not occur as a rule in moist clays till they are drained. If they occur during a severe drought they are larger and not so numerous as on drained lands, and close up during wet weather. They are of no benefit to the vegetation. When the land is thoroughly drained they remain open, even in the wettest weather. Mr. Dempsey, C.E., gives the following table which represents the depth and distance apart that practice has assigned to drains in England:—

Character of Soil.	Depth.	Drains Distance apart.
Compact.		
Tenacious clay	... 2 feet 6 inches	15 feet.
Friable clay	... 2 " 9 "	18 "
Soft free clay	... 2 " 9 "	21 "
Medium.		
Clayey loam	... 3 " 0 "	21 "
Gravelly	... 3 " 3 "	27 "
Friable	... 3 " 3 "	30 "
Porous.		
Light loam	... 3 " 6 "	33 "
Sandy	... 3 " 9 "	39 "
Light gravelly sand	... 4 " 0 "	51 "
Coarse	... 4 " 6 "	60 "

Judging by what I have seen of the soils of Southern India and Ceylon, I would for coffee soils recommend the minimum depth to be three feet. This will in most cases bring the water line below the tap root; probably three feet for the side or wing drains will be sufficient and four feet for the mains. As aëration of the land and improvement of the physical conditions

are the objects in view, I would keep three feet as the minimum depth for all drains on coffee, tea, and cocoa estates, but would vary the distance between them to suit the nature of the soil. Main drains are best made in the direction of the natural flow of the surface water, and may be about four chains apart. The wing, or side, drains should be cut so as to give them a fall of not more than one in sixty to eighty, and the distance apart must be regulated to suit the soil and contour of the land. On most coffee soils one to two chains apart would be a good distance to place them at first; then, if that were found insufficient, another could be put in between. The fall of the main drain is not a matter of much importance, but should be sufficient to run the water off easily. On steep lands catchpits should be cut at intervals to moderate the force of the flow of water. With the wing, or side, drains the full benefits of the ammonia nitrogenous matters and carbonic acid contained in the rain will not be obtained. A fall of one in one hundred gives very good results, but it would not be greater than one in sixty, and may be very much flatter as long as there is a decided fall, —if it is only one inch in a chain it is enough.

When jungle or grass land is above the estate it will often be advisable to cut a catch drain five or six feet deep along the boundary and start the mains from it. The wings branching out on each side of the main drain should not be placed opposite each other, and should have the junction with the main rounded off so that the water does not enter at right angles or nearly so to the main, but more or less parallel with it. If the soil is a clayey loam resting on an impervious clay great care will be required on steep estates to lay out the drains so that landslips will not occur. Where possible, it is advisable to cut the water channel in the clay. On steep land it is necessary to carefully prevent any lodgment of water, especially where a yellow clay rests on a blue, and drains should be cut below the yellow in the soil in the blue clay when practicable. Where ferruginous gravel lies on clay it is advisable to cut the drain through the gravel into the clay, in order that the lower oxides of iron may be fully oxidised and deprived of their deleterious qualities.

Open drains are more suitable for plantations than closed ones laid with pipes, which are liable to be blocked by the roots of the trees. They will, for three feet deep, cost from four to eight running yards per rupee, depending on the nature of the soil, presence of stones, roots, &c. There is no necessity to have them any wider than required to allow the coolie to cut out earth to necessary depth, say for mains two feet wide at top and nine inches to a foot at bottom, with a depth of four to six feet.

Wing drains need not exceed one foot six inches at top by four to six inches at the bottom. Depth is the important factor, not width. These drains will more effectually cultivate the land than even deep fork-digging. They will often restore the fertility of lands which have been poached and compact by hand weeding and mamotie digging till they are impervious to air a few inches from the surface. Neither coffee, nor tea, nor any other crop will do well on land through which both water and air cannot easily find their way. Tea will not grow on the site of old coolie lines, nor as far as I am aware, on any other land that has been compact by constant traffic. On many of the estates in Ceylon the natural drainage of parts is so good that coffee may be seen growing luxuriantly within a few paces of washed declivities on which the coffee had died off. Had these steep lands been thoroughly drained at the beginning, they would have had much more coffee growing than now exists. I would call the attention of tea planters to the advantages of thorough drainage before it is too late. Let them just consider. Coffee has practically been replaced by tea in Ceylon. History repeats itself. What is to replace tea? While thinking over the matter, it is as well to leave nothing to chance, and instead of resting content with natural drainage and superficial gutters, deep drain the lands before it is too late. If by skilful cultiva-

tion wheat can be grown on the same land for sixty years, so can coffee and tea; but this requires thorough drainage and suitable manures if remunerative returns are to be obtained. Extended observation has shown that when one order of plants has reduced the food most suitable to them to a minimum they die off, and are naturally followed by another order which avails itself of the store of food left by the preceding one, and the plant that follows is one that makes a minimum demand on the food required by the first. If any one plant is to grow continuously on the same land, the *status quo* must be maintained. Manuring will not do it, unless the land has natural drainage; the soil must be aerated as well as manured.

Plants derive their nitrogen and carbon partially from the air and partially from the soil. The leaves absorb the carbonic acid from the air, while the roots appropriate a share from the soil. Liebig contended that the nitrogen was taken up from the air. His words are very instructive: "Annual and especially summer plants grow and attain their perfection in a comparatively short time; they do not prosper on a soil which is poor in those mineral substances necessary to their development. To attain a maximum height in the short period of their existence, the nourishment contained in the atmosphere is not sufficient. If the end of cultivation is to be obtained, we must create in the soil an artificial atmosphere of carbonic acid and ammonia; this surplus of nourishment, which the leaves cannot appropriate from the air, must be taken up by the corresponding organs, *i.e.*, the roots, from the soil. But the ammonia, together with the carbonic acid, are alone insufficient" Mr. G. Ville corroborates these deductions so clearly put forth by the illustrious Professor fifty years ago. In his manual on artificial manures he wrote:—"But another, and equally important result must not be lost sight of, *viz.*, that if the three mineral ingredients are omitted from the normal manure and nothing left but the nitrogenous matter, its efficacy is almost entirely lost. We therefore see that the acid of phosphoric acid, lime and potash is absolutely necessary, and if it happens that the use of the nitrogenous matter without any admixture of them succeeds, it is because the soil is naturally supplied with these three mineral ingredients. . . . Vegetation imperatively demands fourteen elements, but it is only necessary to give four to the land, as the rest are obtained from the air, the soil, and the rain." No stronger arguments can be produced than these, supported by the experiments of M. Boussengauer, Lawes and Gibbert and Hebrugel Wilfrath, that it is absolutely necessary to bring the air and rain in contact with the roots; and in no way can this be done more effectually and cheaply than by deep drainage. In Great Britain, according to Mr. Parkes and Mr. Smith of Deanston, the cost is as follows for labour only:—

	Depth.	Distance between drains.	Cost per acre.
Uniform clay	3ft.	33ft.	£ 1 0 0
" " "	3 to 4ft.	33ft.	1 6 8
Clay with some stones	4ft.	50ft.	1 6 6
" hard gravelly subsoil	4ft.	49½ft.	1 15 6
Clay, gravel and sand	4ft.	66ft.	1 6 8
" gravel and subsoil	3½ to 4ft.	33ft.	2 10 0
Sand and gravel	4ft.	40ft.	3 6 0

The width of these drains was from four to nine inches at the bottom and from eighteen inches to two feet wide at top and cost per rod of six yards for cutting 8½d. to 1s. 2d.

The bottom is easily cut out by a scoop hoe of the Essex pattern, and as the drains do not require to be filled up, as in the case where pipes or tiles are used, they should be cut for considerably less on land that is free from rocks and tree roots. It is essential when the drains are once made to keep them clear and free from dirt and dead leaves.

Had the importance of thorough drainage met with the consideration it deserves, thousands of acres of the best soil of the Coffee Districts of Ceylon and India would have not found

their way into the rivers to be carried down to the low-lands. Though there would probably have been failures of coffee, poor lands, there would have not been the wholesale destruction of estates. A tree cannot grow if the soil is washed off its feeder roots, and must fail. Whether its death be attributed to *Hemileia vastatrix*, green bug, blackrot, or insidious defunctification the cause is most frequently want of strength to resist the attack due to insufficient nutriment. If the supply is short because feeder roots are exposed by the soil being washed off, they are useless; the mouths of the tree are gone, they cannot take up the food, and the death of the tree is only a question of time. To wash, which could in most cases have been prevented by thorough drainage, the greater number of failures of coffee estates in Southern India and Ceylon are due to. There are very few estates that will not be improved by thorough drainage. Where it is of the first importance to have healthy plants and good pecuniary returns, let drainage be the first consideration; then manure and reap the full benefit derivable from the climate, rain, air, and soil.

TEA.

NEW MARKETS.

WANT of space in our last issue forbade us to notice Messrs. Gow, Wilson and Stanton's interesting diagram of the progress of the industry during the last seven years. The same reason now makes it difficult for us now to do more than note the most interesting points. In 1887 foreign markets only absorbed 14 million pounds of British-grown tea, last year 42½ were thus disposed of. The Indian Tea Industry first began in 1837. It took 50 years for Indian and Ceylon tea to reach 50 per cent of the tea consumed in Great Britain. Next year it will probably supply half the total amount produced in the whole world. In 1837 England took 30½ M. lbs., all Chinese. In 1887 it was 183½ M., half of which was Indian and Ceylon. Last year it was 227¾ M., 89% of which was British.

The dangers of over-production have been postponed but the large areas now coming into bearing in India and Ceylon will mean a recurrence of the danger. The price has been steadily falling with the increase in supply and consumption. The tea imported to England has increased by 42 M., in the last six years, while the price has fallen 2d. in that period.

Of the new markets open Australia has supported British enterprise by displacing 50% of China tea by Indian and Ceylon. North America consumes 100 M., of which it supplies 10 M. only; this has taken 10 years to effect, but in the last 3—4 years the proportionate increase has been very quick. South Africa is receiving attention. In Europe Russia, Germany, Denmark and Holland are the only countries which use tea in any quantity.

Reduction in cost of production has proceeded steadily but has now reached a point when amalgamation of small estates and concentration are the only important channels left for improvement. Applied science has been till now quite neglected and evidently will only be adopted when absolutely forced on the industry. Broken teas are a great and increasing discount: the export trade demands only leafy teas, and the greater the extension of foreign markets, the larger the amount of broken teas placed on the London market. China is doing her utmost

maintain her present, and even regain her former, position. Such competition cannot fail to be of importance.

Messrs. Arbuthnot & Co.'s Monthly Market Report dated London, 11th June 1897, says:—

SOUTH INDIA.—Rather over 4,300 packages were brought to the hammer averaging 6 $\frac{3}{4}$ d. contrasted with 7d. for 1,900 pkgs. in April. The style of leaf was fair, but, as a rule, the teas lacked strength and flavour.

Travancore.—The majority of shipments from the Madras Presidency were from this district, but the character of them on the whole was of an ordinary description; useful invoices were however received from Bonami, Arnakel, Kudwa, Karnum, and Peshhurst.

The Neilgherries.—Seven invoices were catalogued, most of which were of good quality and met with attention.

South Wynaad.—The offerings were as usual small, but being of saleable style they commanded good competition and passed off with spirit.

A Rock ahead.

Under this title the Calcutta financial organ, *Capital*, strikes a warning note on the continuous extension of tea-planting. We have as it is very nearly displaced the whole of the China Tea that used to be sold in Great Britain. The only other outlet, which of course remains a huge one, is that of foreign markets. The great danger of course lies in this: is it possible that we can force foreign consumption faster than our supply increases? Our progress has been great in the past few years, but the danger of over-production thus avoided has been very grave; it behoves all to keep a watchful eye on the situation.

The London Market.

INDIAN TEAS.—The market has been practically closed, says the *P. M. Review* of 12th June, no public sales having been held and but little Tea offered privately. Until the new crop arrives in fairly large quantities the demand is not likely to show much improvement, as the supply mainly consists of inferior descriptions. Then, of course, all will depend on the character of the Teas, and if the imports contain a good proportion of the medium and finer kinds, there will be a good demand, as these grades have for some time been very scarce. On the other hand, if they are principally of poor quality, and especially coming on an already overstocked market of these kinds they are not likely to meet with much inquiry, and importers must be prepared to accept lower prices than those now current. Although the season is reported to be a late one, the facilities for the transport of Teas from most districts to Calcutta have so much improved of late years that considerable shipments will probably reach here about the middle of next month and the beginning of August. It is satisfactory to note that the reports of the weather are more favourable, and, should this continue, the deficiency in the outturn in some of the gardens will no doubt soon be made up, and in the course of a few weeks a much better selection will probably be forthcoming. The public sales for next week are small, only 4,514 packages being catalogued.

CEYLON TEAS.—This market opened on Thursday, when the first sale since the holiday took place, but only a small quantity was brought forward, and firm to advanced prices resulted. Next week, in consequence of the auctions being extra large, the usual sale will be divided into two days,

part taking place on the Monday and the remainder on the following day.

A YEAR OF TEA.

"In accordance with custom," Messrs. W. J. and Hy. Thompson have reviewed the Tea trade of a year, dating from 1st June 1896. They publish certain figures relating to sales, crops, &c., and remark:—"There is much in these figures encouraging to all who are interested as producers in the growth of the trade in Indian and Ceylon tea. The continuous increase in production has been accompanied by a steady growth of consumption; not, indeed, at home sufficient to absorb the increase in supply, but still, such as to maintain prices, speaking generally, at a fairly remunerative level; while abroad, sufficient progress has been made to exercise an influence upon value, and to justify confidence in a wider development in the future." But the next sentence is less sanguine. The review continues:—"It is obvious that so great a decrease in the use of China tea at home having already occurred, and its place having been filled by British-grown tea, the rate at which consumption of the latter grows will not be so rapid in the future, unless something exceptional should happen to stimulate it. The following figures illustrate this:—Proportions in which the different growths were used in the United Kingdom: Of China, &c., 21 per cent. in 1891-2, 13 $\frac{1}{2}$ per cent. in 1893-4, 11 $\frac{1}{2}$ per cent. in 1895-6, and 10 per cent. in 1896-7; British grown tea, 79 per cent. in 1891-2, 86 $\frac{1}{2}$ per cent. in 1893-4, 88 $\frac{1}{2}$ per cent. in 1895-6, and 90 per cent. in 1896-7. The ability of the home market to take larger quantities is, therefore, becoming mainly dependent upon the greater consuming power of the country in the aggregate." So far this has shown continuous and steady growth. Messrs. W. J. and Hy. Thompson attribute this (1) to the facilities given to the public, by purveyors, for obtaining a cup of tea properly made, which has helped to make it a more popular beverage; (2) to the moderate price at which tea of good quality is now obtainable from all the principal vendors. They consider it not an exaggeration to say that to a large part of the population the good tea of India and Ceylon has become an almost necessary article of diet, cheaper and more exhilarating than any of its rivals.

As these causes have now been at work for some time in London and other great centres, if not in the country, it is thought that there might be some risk in calculating on home consumption expanding in the future as substantially as it has done for the last two years. The firm whose review we quote, remarks, therefore, on the need "of turning to the large and, as yet, almost unopened outlets" for Indian teas abroad. It does not discuss the means of finding the way into new markets, it urges the necessity, and adds, "As pioneers in this work, those representing the Planters' Association have done good service; for their distribution of information respecting the production and preparation of our tea is in itself of the highest value." Nevertheless, Conservatism carries the day, and these brokers hold that in the long run, and for large results, reliance must be placed upon the ordinary channels through which trade flows. It is, therefore, they say, opportune that the system

of sending out tea as a proprietary article, under a registered title, has been so widely adopted, as it is perhaps more conducive than any other to place our teas where they were unknown before and enable consumers to obtain a regular supply. Whether this be so or not, the facts stated in the review under notice are decidedly encouraging. The progress made in trade abroad, through the medium of London, is shown by the following figures relating to exports from the United Kingdom: Out of the total China, &c. 80 per cent. in 1891-2-3, 76½ per cent. in 1893-4, 62½ per cent. in 1895-6, 59 per cent. in 1896-7; British-grown tea, 20 per cent. in 1891-2-3, 23½ per cent. in 1893-4, 37½ per cent. in 1895-6, 41 per cent. in 1896-7. In conjunction with the increasing shipment to Asia, Australasia and America direct from Calcutta and Colombo, these statistics prove that progress is constant, if a little slow. It is also pointed out that an "influence not to be overlooked is the gradually growing inquiry for fine-flavored tea from abroad, not yet sufficient to meet the value of the larger supply from India, but already so constant as to raise the level of rates for the smaller quantity produced in Ceylon." This, Messrs. Thompson remark, "is a matter of deep concern to those engaged in extending the area under plant, as it has a direct bearing upon the two alternative policies, viz., whether to open up new districts whose ability to give good tea is doubtful, or to concentrate energy and capital upon more favoured localities. As regards districts where large crops can be produced at a low cost, it is obvious that if the value of such tea as they yield should decline much more, and cost be enhanced by higher exchange or difficulty in getting labour, the present margin of profit would disappear. It would be unwise to disregard the contingency of a further fall in the value of common tea, in view of the extensions made in recent years in districts which yield it, and of the possibility that however steadily the world's demand may grow, it may not expand fast enough to keep pace with the output. This is an eventuality suggesting discriminating caution in breaking new ground, and the devotion of far more attention to the quality of produce than to the out-turn of a heavy crop."

All this leads up to a recommendation that new markets should be opened out and developed, and, curiously enough, another leading firm of brokers—Messrs. Gow, Wilson and Stanton—publish almost simultaneously a circular urging the same general view. For the present, we must let the latter firm's suggestions stand over. As for the former, they are obviously right in stating that wide fields lie open before us—and that the possibilities of the future, if our taste for tea were to extend to those whom we influence, find a vivid illustration in the following figures: The British race in the United Kingdom takes annually 228 million lb. of tea, in the Australasian Colonies 28 million lb., in the Dominion of Canada 22 million lb.; that is to say about 48 millions of people take 278 million lb. of tea, equal to 5¾ lb. per head per annum. Whereas, in the United States of America, 65 millions of people use annually less than 1½ lb. per head; in Russia, 100 millions of people use annually less than 1 lb. per head; in Germany, 53 millions of people use annually less than ½ lb. per head; in France, 38 millions of people use annually less than 1-32 lb. per head. Naturally, such figures as these suggest an inquiry whether there is any reason why a sustained attempt to popularise their native product among the count-

less millions of India itself should fail. The attempt has been made, but no great success has yet been achieved. Should further attempts be made? The answer rests with planters themselves, and in this connection it may be interesting to note how changes of method in England have affected trade. Messrs. Thompson say that the successful development of the system of selling tea under a registered name is, in conjunction with the blender's business, transforming the methods by which the tea trade is carried on, and has attended by a material effect upon the London market. It has brought in a large amount of fresh capital seeking remunerative employment, and has placed ample means at the disposal of traders with progressive ideas who realize that in order to make and keep their business they must supply the public with good tea at moderate prices, and out-distance their rivals—if they can—by the merit of the article sold. Cannot a hint be taken from this, that the 'indigenous' demand for Tea be once more taken in hand with a view to larger developments?

POISONED FROM HEAD TO FOOT.

WE call particular attention to the subjoined statement. An incident of its kind, of equal interest and importance, has occurred of late years. A declaration so startling in its general scope, so full of corroborative detail, certainly warrants the conclusion that a new epoch in the healing art has dawned upon us. Aside from the force of the legal forms which it assumes, the facts, as alleged, rest upon the results of a thorough and careful investigation.

(Copy.)

I, George Lack, of 123, Stamford Street, Waterloo Road, London, do solemnly and sincerely declare as follows:—

"I was always a strong, healthy man up to April, 1876. At that time, whilst engaged at the Stamford Street Embroidery Works, cleaning out a tank which had been used for dyeing purposes, I slipped and fell in the tank (which was covered with verdigris) cutting both my elbows. The parts soon became swollen, and in a week's time the flesh was putrid, as if gangrene had set in. My system seemed to be poisoned, and I began to lose strength rapidly. My appetite left me and I could not bear the sight of food, and a little I did eat lay on my chest like lead. I went to the Royal London Hospital, Gray's Inn Road, where I was under treatment for several weeks, but I got worse. After this I got an order and went into Lambeth Infirmary, where I was placed in No. 11 Ward. At that time my condition had become serious, for I felt so sick and faint that I could scarcely move, and, after a time, I got so bad that I could only get up for an hour or two each day. Later I had abscesses formed on my shoulder, and gradually spread over my back and the upper part of my body. My face was completely covered with the abscesses, which, on healing, left deep marks, that I have to this day. After this I had swelling around the joints, and I had abscesses formed in the calf of my leg, and I had also run deep wounds, extending from the top of my ankle to the bottom of my feet. An offensive discharge of matter came from the parts, and it seemed as if the abscesses were drawing the life out of me. I was now in a hopeless, helpless state, and felt that I did not care for soon my end came. For days and days I never closed my eyes, and on one occasion I had but little sleep for eighteen days and nights together, the doctor's sleeping draughts having no effect upon me. When I did at length fall asleep I slept from Thursday to Sunday afternoon. From all the doctor's medicines and applications I got temporary relief. On one occasion the doctor said that I could not live throughout the day. The nurses placed a screen round my bed, expecting that I should die during the day, and my breath was sent for. When the doctor called at night he was surprised to find me alive. However I took a turn for the better, but for m-

afterwards I was, as it were, on the brink of the grave. I had to be lifted in and out of bed, and was fed on slops and light food. Sometimes better, and at other times worse, I continued in this wretched state for over FIVE YEARS, during which time I remained in the hospital. In August, 1881, I became tired of being in the hospital, and was carried to my house. I was so weak and emaciated that I got a pair of crutches to help me to hobble about the house. My father and friends who saw me were shocked at my feeble and emaciated appearance, and thought I was not long for this world. I lingered on in the same wretched state for two more years, expecting and wishing that I should soon be out of my misery. In November, 1883, after suffering over seven years, my father bought me a bottle of medicine called Mother Seigel's Curative Syrup and persuaded me to try it, saying that it had been of great benefit to him. After I had taken half the contents of a bottle, I felt brighter and in better spirits than I had been in for years. My appetite improved, and by continuing with the medicine my legs began to heal, and I got stronger and stronger. In less than three months I was able to put aside my crutches and walk with the aid of a stick. After I had taken Mother Seigel's Curative Syrup six months I was back at my work, as strong as ever was in my life, and have since kept in the best of health. I wish the particulars of my case known to other sufferers, and the Proprietors have my consent to make what use they like of this statement. And I make this solemn declaration, conscientiously believing the same to be true. By virtue of the provisions of the Statutory Declaration Act, 1895 (Will. IV. c. 62).

(Signed) "George Lack."

Declared at No. 16, Godliman Street, Doctor's Commons, in the City of London, this 13th day of April, 1893, before me, (Signed) George H. Brocks, a Commissioner for Oaths.

Here we have a case of profound and persuasive blood poisoning. Verdigris (chemically the bibasic acetate of copper) is, when introduced into the circulation, a slow poison, for which no positive antidote is known. There is no doubt that the physicians in the hospitals did all that could be done, with the knowledge and resources at their command. Unhappily their treatment, at best, was only mildly palliative; the poison continued its deadly work, until it saturated the poor fellow's entire system and perverted all its functions. What but an ultimately fatal result could have been reasonably expected.

Mr Lack's final and perfect recovery, through the use of Seigel's Syrup, illustrates beyond the need of comment the unprecedented power of that well-known remedy to renew the digestion, stimulate the secretory organs, and thus to purify the blood. In common with all who shall read the details of this case, we most keenly regret that Seigel's Syrup was not taken immediately after the results of the accident first appeared.

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MARKET SUPPLEMENT.

SATURDAY, JULY 10, 1897.

COFFEE.

COFFEE. Advices dated London, 18th June 1897, state:—The market has been fairly supplied, but the tone generally has proved very dull, and prices for the most part are easier. Ceylon is firm, and the fine qualities of East India also sold at full prices, but the bulk, which consisted of low middling to middling qualities, was only partly sold at a decline of 2s per cwt. Colory Costa Rica and Guatemala are without change, but less desirable kinds are dull of sale. Foxy green Nicaragua, &c., which sold last Friday at a reduction of 3s to 4s per cwt. subsequently recovered 1s to 1s 6d per cwt. "Futures" have been dull, and the closing prices are the lowest for the week, viz:—

London.....Santos.....September delivery.....	37s 6d
New York.....No. 7 Rio.....	7.15 cents
Hamburg.....Santos.....	37½ pf.
Havre.....Santos.....	46 francs.
Holland.....Good ordinary Java.....	46½ cents.

The Dutch Trading Company announce their next auction for June 22nd, when 19,000 bags 40 cases will be offered, against 26,300 bags 70 cases in 1896. Good average Java is valued at 46½ cents.

Imports Deliveries and Stock of COFFEE in London are as follows:—

	STOCK.		IMPORTS.	
	1897.	1896.	1897.	1896.
West India.....tons	434	444	638	946
Ceylon	110	129	216	284
East India.....	2560	3073	4364	6361
Mocha	532	480	439	499
Brazil	2504	1378	1118	759
Other Foreign	7771	6443	15238	11698

Total tons...13911 11947 22013 21547

HOME CONSUMPTION.

EXPORT.

	1897.	1896.	1897.	1896.
West India.....tons	179	292	380	644
Ceylon.....	80	214	152	258
East India.....	1105	1502	1485	2998
Mocha.....	262	264	103	116
Brazil.....	640	600	1210	1286
Other Foreign.....	4699	4189	5858	5344

Total tons... 6965 7061 9188 10646

The preceding figures exhibit—

In the Imports an increase this year of	466 tons.
Home Consumption a decrease of	96 "
Export a decrease of.....	1458 "
Stock an increase of.....	1964 "

The auctions this week have gone off as follows:—

CEYLON.—Plantation.—8 casks 1 tierce 3 barrels 1 bag sold, triage 81s, smalls 94s, middling 94s, fine middling and bold 107s to 109s 6d, peaberry 112s.

CEYLON.—Liberian.—1 cask 1 tierce 5 barrels sold at 47s for bold and medium yellow.

EAST INDIA.—1,699 bags mostly sold as follows: Mysore, triage 66s to 82s 6d, smalls 85s to 96s, middling dull 93s, good middling colory 98s; Neilgherry, triage 63s to 70s, smalls 75s to 80s 6d, low middling to middling gray 86s 6d to 89s 6d, good middling 94s to 97s 6d, good well made 100s to 100s 6d, good to fine bold 101s to 106s 6d, peaberry 90s to 103s 6d; Naidooobatum, smalls 84s; Wynaad, dull gray 81s; Travancore, triage 64s 6d, good boldish hard gray 98s, good bold 101s, peaberry 101s 6d.

To-day's auction comprised—218 bags East India, 26 half frazils Mocha, 19 barrels Jamaica, 744 bags Nicaragua, 149 bags Colombian, 36 bags Vera Paz, 1000 bags Guatemala, 207 bags Salvador, and 21 bags Mexican. The sales went off with slow demand at 6d to 1s decline for common pale kinds. Good colory qualities mostly bought in.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (June 18, 1897) says:—Auctions have been on a small scale this week, and although the demand was slow, values show little or no change since our last. No Public Sales will be held next week in consequence of the Diamond Jubilee celebration. About 1,700 bags East India were offered but a good part consisted of second hand parcels which sold slowly at about previous rates, whilst colory qualities of recent import were fully maintained.

Fair prices were obtained for the small quantities of Central America brought forward.

An easier tone has prevailed in Futures and quotations mark a decline of 1- on the week.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Fortnight ending June 16th, 1897, says:—Bank rate 2%. Bombay Exchange closed at 1s 2½d. Brazil Exchange 7½d. Rupee paper 3½%. Silver 27½ per oz.

Public sales were resumed on the 10th inst., and since then the market has been very dull and lower for almost all qualities except finest, which is very scarce. Ordinary kinds show a decline of about 2s to 4s per cwt. foxy greenish Nicaragua, of which the supply has been heavy, selling at an even greater reduction. Brazil markets continue dull. There will be no sales next week owing to the Jubilee celebrations.

Daily receipts have averaged 5,857 bags in Rio, and 5,286 bags in Santos.

According to Messrs. Duuring and Zook the European stocks on 1st inst. showed an increase of 2,400 tons, and the visible supply a decrease of 6,630 tons, the figures being 143,000 tons and 249,660 tons respectively against 140,600 tons and 256,290 tons on the 1st May.

Futures continue quiet, the week's movement being a decline of 3d 6d viz:—Good average Santos in Havre, September delivery, fcs. 46. in Hamburg pf. 37½, and No. 7 low ordinary Rio in New York \$7.20.

To-day's London official quotations are:—

	June	July	Sept.	Dec.	March	May
RIO	34/6	—	35/6	36/-	—	—
SANTOS	37/3	37/3	37/9	38/3	38/9	39/

We quote:—

Ceylon, mid. to good mid. 101/ @ 106/	Costa Rica, mid. to fine... 83/ @ 101/
Do. small to low mid. 88/ „ 100/	Do. ord. to low mid. ... 63/ „
East India, mid. to good mid. 91/ „ 105/	Jamaica, good to fine ord. 52/ „
Do. small to low mid. 79/ „ 90/	Do. greenish to fine colory... 74/ „
Guatemala, mid. to fine... 78/ „ 102/	African ... 32/ „
Do. good ord. to low mid. 64/ „ 77/	Columbian, ordinary ... 56/ „
Salvador, good ord. foxy greenish... 57/ „ 58/	Do. good ord. to low mid... 63/ „
	Do. mid. to fine... 80/ „

Receipts in Brazil compare as follows with previous years:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
RIO	3,435,000	2,298,000	2,637,000
SANTOS	4,985,000	2,976,000	3,920,000
	8,420,000	5,274,000	6,557,000

Auctions:—

76 casks and tierces 40 barrels and bags Plantation

	Ceylon	@	90/	@	100/
210 bags Mysore	...	84/	...	...	...
210 bags Coorg	...	94/	...	...	...
1,758 bags Neilgherry	...	75/	...	...	...
57 bags Wynaad, part sold	...	81/	...	...	...
850 bags Naidooobatum	...	78/	...	...	...
230 bags Pulneys bought in.	...	...	...	...	...
65 bags East India cherry	...	50/	...	...	...
458 barrels 37 bags Jamaica, part sold	...	50/	...	...	...
2,619 bags Costa Rica, chiefly sold	...	65/6	...	...	...
4,589 bags Guatemala, good part sold	...	54/6	...	...	...
4,810 bags Nicaragua, good part sold	...	53/6	...	...	...
2,898 bags Salvador, part sold	...	60/	...	...	...
152 bags Vera Paz and Coban, part sold	...	83/	...	...	...
343 bags Mexican chiefly sold	...	63/	...	...	...
5,539 bags Columbian, part sold	...	57/	...	...	...
76 bags Honduras, part sold	...	83/	...	...	...
166 bags Venezuelan withdrawn.	...	...	...	...	...
77 bags Bolivian bought in.	...	...	...	...	...
69 bags Peruvian, part sold	...	58/	...	...	...
22 bags Nyasaland bought in.	...	...	...	...	...
8 bags Guayaquil	...	60/	...	...	...
196 bags Bahia bought in.	...	...	...	...	...
15 half-bales Mocha bought in.	...	...	...	...	...

SUPPLEMENT TO "PLANTING OPINION."

14 bags Liberian Ceylon bought in.
84 bags Liberian Johore bought in.
Landed last week 454 tons. Deliveries 718 tons. Stock 14,059 tons.
Do. last year 609 " " 753 " " 12,210 "

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report
June 18th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	20,366 packages.	73,204 packages.	2,959 packages.
1896-1897...	18,853 "	80,678 "	2,864 "
463 pkgs. INDIAN	Total 50,002 packages were offered in public auction this week.		
282 " CEYLON			
257 " JAVA			

The market closed on Tuesday for Ceylon Teas and on Wednesday for Indians and Javas. It is improbable that any Public Auctions will be held until the 28th inst.

Exports of Indian, Ceylon and China Tea direct to Australia
from 1st May to end of April.

	1896-7	1895-6	1894-5	1893-4	1892-3
INDIAN	6,200,000	6,559,463	4,414,112	6,514,360	3,845,328
CEYLON	11,000,000	10,390,000	7,513,975	7,650,000	5,694,729
CHINA	6,756,656	11,262,500	10,463,585	13,000,000	14,650,000
Total lbs.	23,956,656	28,121,963	22,391,672	27,164,360	24,190,057

Indian. Amongst the 12,463 packages brought forward 4,377 were New Season's, the remainder consisting of Calcutta bought and second hand Teas. The New Seasons passed with fair spirit, but without material change in quotations. Other kinds were somewhat neglected and sold with irregularity. Telegraphic advices from Calcutta state that some damage has been done to the Tea Gardens in various places by the recent earthquake, and that delay may occur in the shipment of New Season's Teas.

Week's av. of New Season's Tea sold on Garden Account, 1897,
4,377 pks., av. 8½d. 1896, 3,702 pks., av. 8d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
Assam	1,286 p 9	545 p 8½	1,486 p 9	592 p 8½
Assam and Sylhet.	199 p 6½	1,494 p 7	248 p 6½	1,895 p 7
Arjeeing	1,011 p 10	782 p 9½	1,011 p 10	852 p 9½
Coors	371 p —	47½c 8	371 p 8½	47½c 8
Angara, &c.	8½ —	102 7½	— —	102 7½

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
Neilgherry	73½c 6½	—	73½c 6½	130 p 8
Teral	106 p 8½	—	106 p 8½	—
Travancore	1,331 p 6½	732 p 7½	1,383 p 6½	1,694 p 7½
Total sold on Garden Account	1st June to date 1897, 4,678 pkgs., av. 8½d. 1896, 5,312 pkgs., av. 8d.			

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	3½d	4½d	4½d	3½d
FANNINGS. (Red to brown, strong rough liquor)	4d	5d	5d	4d
BROKEN TEA. (Brownish to blackish, strong liquor)	6½d	7½d	7d	5½d
PEK. SOUG. (Blackish greyish, useful liquor).	6½d	8d	8d	6½d
PEKOE. (Greyish to blackish, some tip, useful liquor)	8½d	9d	8½d	9d
PEK. SOUG. (Blackish greyish, inferior liquor).	5d	5½d	6½d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor)	6d	6½d	7d	6½d

Ceylon. Owing to the heavy quantity, sales were held on Monday and Tuesday, in order to enable buyers to devote sufficient attention to the large number of samples. The Auction passed with some irregularity, especially in Teas of higher grade with only indifferent quality. Teas for price were fairly steady. Private telegraphic advice from Ceylon gives the amount exported to U. K. for the first half of June as 5,250,000 lbs., against 6,000,000 lbs. last year. The total exported from 1st January to date is now 48,250,000 lbs., against 47,750,000 lbs. same period last year.

Average for week 7½d. against rather under 7½d. last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 505,717 pkgs., av. 7½d. 1896, 466,844 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6d	6½d	6½d	5½d
PEKOE (Ordinary leaf, little twist; fair liquor)	7d	6½d	8d	7d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5d	5d	6d	4½d
PEKOE (Somewhat bold leaf; indifferent liquor)	5½d	5½d	6½d	5d

Java. The 2,257 packages brought forward consisted mostly of Teas of direct import. Sales passed with fair competition especially for Teas with good liquors, but other kinds showed some irregularity. A good invoice was brought forward from Perbawatee, while a few Teas from "Ardja Sarie" and "Tjiomas" grown from Assam seed were of good useful character.

Bank rate 2 per cent. Exchange on London three months sight.—
Calcutta 1/2½ Colombo 1/2½.

PUBLIC SALES OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8½d.) June 18th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	73½c	6½	20½c	8 9½	6½c	7	...	...	...	...	...	...	...	...
OA	26½c	7½	...	...	14½c	5	15½c	6½	15½c	4½	...	...	3½c	3½
Shia Shola	47½c	5½	...	...	...	...	...	...	...	...	...	...	...	...
Travancore	1331 p	6½	19½c	9½	101½c	7½	102½c	8½	73½c	6½6½	...	...	5½c	5½
Nemudi	318½c	7½	...	...	26	†6	35	7	15	†5	3	5½	9 p	3 3½
Tchencoil	88 p	6½	...	...	36½c	5½	...	...	...	...	1½c	4½	...	...
Alamore	37½c	5½	...	...	33	5½	20	6½	...	...	1	4	1	2½
MR	55	5½	...	...	124	†4½	105	†6 †6½	40	†4 4½	...	...	6	2½
Olderslie	275	5½	...	...	33½c	5½	30½c	7	...	...	4½c	4	2½c	3½
ome	69½c	6½	...	...	...	...	...	...	...	...	...	...	4½c	4
Overcauld	150 p	6	38 p	6½ 8	108 p	5½5½	...	...	...	...	...	...	...	...
Field T Co	46	6½	...	...	23	†5 †6½	22	†7	...	...	...	...	...	...
L	37½c	6½	...	...	37½c	6½	...	...	...	...	...	...	...	...
Arvithi	107½c	6½	...	...	36½c	6½	30½c	7½	35½c	5½	...	...	6½c	5½
eafield	149½c	6½	...	...	98½c	6½	48½c	†8	...	...	2½c	3½	1½c	3½

Teas marked thus † are New Seasons.

COIMBATORE COFFEE WORKS.

COFFEE CURED AND SHIPPED TO LONDON
ON PLANTERS' ACCOUNT.

ADVANCES MADE ON CROPS ON MODERATE TERMS.
Tools, Roofing, and Planters' Stores kept in Stock; Poonac, Bone and other
Manures supplied and mixed in any proportions.

T. STANES & CO.,

Coimbatore and Coonoor.

OAKES AND CO., (Limited),
OOTACAMUND.

Grand Clearance Cash Sale

COMMENCING **JULY 15th, 1897.**

Great Reductions in all Departments.

KINDLY WRITE FOR SALE LIST.

SPECIAL LINES FOR PLANTERS.

Black Grain Hide Waterproof Boots, very strong and durable	...	Original price Rs. 21-0	Reduced to Rs. 12-0
Flannel Shirts with collars in a variety of patterns	...	...	Rs. 4-0
Twill Lining Shirts, very soft and comfortable, in Stripes, Plain colours and White	...	...	each Rs. 3-0
Black Vulcanized Waterproof Coats	...	Original price Rs. 19-0	Reduced to Rs. 12-0
" Paramatta Regulation Inverness Capes	...	" 45-0	" 30-0
Tweed Patterns do. do.	...	" 40-0	" 30-0
Natural Wool Underclothing, Wool Sweaters, Cardigan Jackets, all very much reduced.			
A splendid line in Tweeds, Flannels, Breeches materials, and Covert Coatings, also reduced.			
Samples, Prices and Measurement Forms on application.			
Maistries' Dark Blue Melton Cloth Coats, Rs.3 during sale.			

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, JULY 17, 1897.

[No. 16.]

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MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 23rd July 1897.

Coorg.

POLLIBETTA, 12th July.—Weather.—Fresh burst set in on 4th not 14th. Rainfall exceeded one inch on 6th and 8th, three inches on 9th, 2.50 inches on 10th. Total for the week ending 10th, 10—11 inches. Monsoon still going strong. 2.50 inches yesterday. Rain lighter to-day. Long intervals without rain between showers. Planting in progress. *Plant diseases.*—Coffee looking splendid all over. A little leaf-disease only in parts of nurseries here and there. *Crops.*—Coffee crop showing up better every day. *General health.*—Fever, coughs and bowel complaints prevalent to a small extent. *Labour.*—Sufficient. Paddy cultivation actively pushed on all over the country.

Nilgiris.

SHOLUR, 15th July.—I regret I have not sent reports the last two weeks, but stress of work has prevented me, and I had not quite got into the way of your weekly issue. The monsoon has been very mild as far as wind is concerned, but rainfall 24.65 to date against 20.93 to a similar period last year. Highest and lowest temperature in July 67° and 56° respectively. Tea had a bit of a stop owing to cloudy weather and wind, but putting out a splendid flush after the short break. Labour plentiful. Grains dear, gram and ragi having gone to 18 and 16 seers per rupee respectively. Should the wind hold off and the soft rain interspersed with sunshine continue, August should be a record month for tea planters on this side.

SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; and Quarterly, Five Rupees, including postage.

ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

Nellampathy, British.

15th July.—*Weather*.—Rain for week 12.51. Total to date 54.19. On Tuesday and Wednesday it seemed like breaking again, but this morning there is a heavy Scotch mist with heavy showers now and again. We had five days very heavy weather with wind very high, and working in clearings was exceedingly dangerous, as numbers of trees were falling. *Plant-diseases*.—Leaf showing in a few places but not badly yet. *General Health*.—Fair; still a lot of sickness about. Last week cholera broke out among the Moplar and there have been about 12 deaths I think. The Moplar all cleared out saying, "If they were to die they would much prefer doing so in their own country." This has thrown work back considerably on large openings where Moplar labour is depended on to a great extent for most momatie work.

GENERAL NOTES AND ARTICLES.

ACT XIII. OF 1859.

AN IMPORTANT RULING.

A RECENT ruling of the Government of India caused a commotion among planters in the South of India. For many months the planters of the Madras Presidency and the Native States of Mysore, Travancore and Cochin have been agitating for amendments in the law that regulates their settlements with maistries and coolies employed to work on their estates; and in particular with respect to the subject of fraudulent breach of contract, in cases where advances have been given in order to secure a supply of labour, and the labour bargained for is not forthcoming. In the Native States planters went so far as to ask for some form of Extradition, with a view to the enforcement within British territory of contracts made within any of these States, and *vice versa*. The planter claimed, in fact, that he should be protected in his contracts with cooly-maistries or recruiters, and that in view of the risk of these men taking advances from him and then failing to supply the labour they had undertaken to bring to his estate, the law should contain penal provisions under which the defaulter might be punished. In this respect, Act XIII. of 1859, which purports "to provide for the punishment of breaches of contract by artificers, workmen and labourers in certain cases," falls far short of what is needed by the planting community. Consequently, planters want additional protection over and above that which is given in that Act. Indeed, many maintain that only *nominal* protection is afforded by this Act, and that when an attempt is made to give practical application to its penal provisions, there is sure to be a breakdown. Be this as it may, the Government of India recognised that the question raised by the South Indian planters needed looking into; and an Enquiry Committee was appointed to investigate the complaints or grievances of planters, to consider whether advances in regard to contracts for labour were really necessary, and to study the conditions generally that affect the relations between Planter and Estate-labourer. This Committee has framed its report, the tenor of which is distinctly favourable to the planter's view. It might reasonably have been expected that pending consideration of this report the Government of India would at least have refrained from taking any action calculated to remove from the planter some of the little "protection," whether actual or nominal, that is accorded to him at the present time. The

Government appears to think otherwise, however, and very long ago it made a move that struck a new and unexpected blow at the planting industry.

This is how it happened. A case was recently brought to the notice of the Government of India in which a Magistrate in Assam issued a warrant under Section 1 of Act XIII. of 1859 for the arrest of twenty-two persons, residents in the Benares District in the N. W. Province, on the ground that they had received advances of money from a recruiter of labour under a promise to proceed to Assam and there work upon the Assam-Bengal Railway. The warrant directed that the persons in question should be taken before the Magistrate in Assam; but when the matter came before the District Magistrate of Benares, who was desired to execute the warrant, he demurred, on the ground that warrants issued under Act XIII. of 1859 do not fall within the provisions of Section 83 of the Code of Criminal Procedure, 1882. This point was referred to the Law Officers of the Government of India, who decided that there is reasonable room for doubt whether the provisions of the Code of Criminal Procedure, 1882, regarding warrants apply to warrants issued under Section 1 of Act XIII. of 1859, and whether a warrant under that Act can be executed at all outside the jurisdiction of the Court which issues it. Remarking upon this, the Government of India says in a Resolution dealing with the subject:—"On the one hand, the words of Section 83 of the Code are unqualified, and so far appear to apply to all warrants. On the other hand, they may be restricted to warrants issued under the Code by virtue of Sections 75 and 93, which seem to apply to the whole chapter." Government states that "though a warrant may issue under Section 1 of Act XIII. of 1859, no 'offence' has been committed until the Magistrate has made an order, and that order has been disobeyed." It then proceeds to say:—"On grounds of administrative policy it is clearly inexpedient to apply the very special procedure provided by that Act, which applies in certain cases penal provisions to the breach of a civil contract, should be capable of being employed to drag labourers many hundred miles from their homes to answer a charge of such breach; and if it should be decided that the existing law permits of such proceedings, it will be necessary to consider the propriety of amending it." Meanwhile, the Government of India, thinking that the doubt expressed ought to be resolved, requested the Madras Government "that applications for the issue of warrants, under Section 1 of Act XIII. of 1859 for the arrest of persons outside the jurisdiction of the Court applied to, and proceedings for the execution, under Section 83 of the Code of Criminal Procedure, 1882, of any such warrants be carefully watched, and that at the earliest opportunity be taken advantage of to mention the District Magistrate or Sessions Judge, as the case might be, to call for the record in the case of any such application or proceeding and refer the matter to the High Court under Section 438 of the Code, necessary measures being adopted to have the question fully argued before the High Court and the result reported to the information of the Government of India." The course here laid down was adopted. The Madras Government took up the matter, and one or two cases were referred to the Local High Court. The Chief Justice declined to hear the Counsel on behalf of the U. P. A. S. I., as representing

planting community; but the Government of Madras, with impartiality that cannot be too highly admired; met this difficulty by instructing the Government Pleader to lay *both* sides of the question before the Judge, in order to obtain a fair and just ruling. The result, as will be seen from a report published on another page, is a decisive victory for the planters.

There may be another fight yet, for the Government of India has uttered a scarcely veiled threat that if its view of the law is wrong, the law shall be altered to make it right. In the face of the report of the Enquiry Committee, this threat loses much of its force. Still, there are one or two points that deserve notice. A reference was made to the Madras High Court on a point of law raised in the North-West Provinces; and a hint was thrown out as to what line should be approved of the Government of India. As to the legal aspect of the question raised, it may be observed that the Government of India probably errs in its statement that no offence has been committed until the Magistrate has made an order and this has been disobeyed. There has been at least one ruling to this effect, we believe; but there is certainly room for the counter-argument that the act in regard to which the Magistrate issues an order or passes a sentence, contingent on a certain immediate default, cannot be confused with the default itself. In any case, either the breach of contract or the default of recognizance and security is an act to be ascertained at the first hearing (in the words of Section 494 *p.* of the Procedure Code of 1882) punishable by law in force. Therefore, the present Procedure Code applies. We might follow this brief statement up with stronger arguments in support of the same view; but the ruling of the Madras High Court renders further detail unnecessary. That ruling should settle the matter finally in favour of the employer, and we cannot believe that the Government of India will attempt to render the ruling obligatory by pressing for amendments of the law that could be opposed alike to the interests of fair play and to the forcible representations of the South of India Planters' Enquiry Committee.

suggestions.

Very often, in personal interviews with some of our readers, we have received novel and valuable suggestions with regard to making this journal of increased value to our public. We have been able to embody many of them from time to time, much to the advantage of the paper. Unluckily, we are at present unable to arrange for a representative to tour through our very scattered planting districts, to take down impressions first hand: might we suggest that much the same result would be attained were freer use made of pen and paper?

the Ceylon Planters' Association.

After a long and chequered but highly useful existence this Association has recently decided upon building a "local habitation," corresponding in adequate measure with the importance of the body whose deliberations will be held therein. The laying of the foundation stone was performed with due solemnity by Lady Ridgway. In the subsequent speech-making, H. E. the Governor again testified, in happily chosen words, his appreciation of the industry of the Island. He pointed out the great value of the buildings, as being a visible and imposing reminder of the importance of the Central Association. May it not be long ere our own United Association follows the good example!

Official dilatoriness in Travancore. That is a very pretty state of affairs that the report of the Central Travancore P. A. exposes. The

Dewan has again assured the Hon. Secretary that maps and title-deeds in respect to lands bought at auction in 1895 are being prepared, and will shortly be issued! It is to be hoped that the Dewan fully realises the disgrace that this delay casts upon his administration. In former days things were supposed to be dealt with more promptly in Travancore, which will soon lose the name of The Model State if official work is allowed to fall so very far in arrears. When, too, the D. P. W. of the State is accused of crimping coolies, there would seem to be something radically wrong in the State of Travancore. Now that these matters have been prominently brought to notice, the Dewan will no doubt give them earnest attention, and proceed to rectify what is wrong.

Advances in "South India."

We were not a little surprised to read in the Ceylon Times, in a report of an interview with Mr. G. Benzie (who has been doing surveying work for Messrs. Finlay, Muir & Co.'s estates), the following: "... but on the other hand their (the Ceylon planters') mouths would water if they heard Mr. Benzie describe the abundance of labour there is and impart the information that *advances are absolutely unknown.*" Advances unknown in Southern India, and the findings of the great Planters' Enquiry Committee, which practically devoted itself to the advance question, only published a couple of weeks! Well-meaning Mr. Benzie, surely he deserves some *kudos* from Messrs. Finlay, Muir & Co. in particular and South Indian Planters in general for his rose-coloured statements. By the way, what does this gentleman mean exactly by the term "South India?" As understood in India, its boundaries extend a few hundred miles at least north of the particular jungles which he surveyed.

Bananas.

The chemical make-up of bananas and potatoes is strikingly similar, as will be seen from the following table:—

	Bananas.	Potatoes.
Water	... 75.71	75.77
Carbonaceous matter	... 20.13	20.70
Albuminoids	... 1.71	1.79
Woody fibre	... 1.74	.75
Ash	71	.97

This fruit is used, as is well known, in tropical countries as the potato is used in temperate climes. It has great advantages over the latter in the many different ways it can be prepared and eaten, though in India there are only two methods in general use: ripe, as a raw fruit, and ripe, in fritters. Yet from the meal alone soups, porridge and puddings, bread, cakes or biscuits can be made, which are more digestible than any known farinaceous material. A delicious syrup can be prepared from the ripe fruit, not to speak of excellent preserves and mock apple sauce. The plantation bill of fare is not so extensive that we can afford to do without such a great stand-by: it is difficult to understand our Anglo-Indian ignorance on the matter.

"The Coccidæ of Ceylon."

We much regret having failed, through inadvertence, to acknowledge the receipt of a copy of the first

part of Mr. E. Ernest Green's work on the "Coccidæ of Ceylon," which reached us some little time ago. The letter-press is excellent, interesting and valuable even to the non-scientific planter, while the coloured illustrations are numerous, life-like and very handsomely got up. The only fault in the whole book was that the first edition of the letter-press was accidentally printed in too large a scale to match the plates. This has now been remedied, and a second edition has been published of the proper size. The subsequent parts will be issued of a uniform size with this. The book is one which will be sure to prove of real scientific and practical value to South Indian Planters, as many of our coffee and tea pests are identical with those in Ceylon. It is rather too expensive a work to be largely bought privately, but each District Association at least should subscribe for a copy for the purpose of reference.

Mr. Green, by the way, has lately been appointed Honorary Consulting Entomologist to the Government of Ceylon, with especial reference to the cacao disease which is now troubling the minds of planters of that staple.

Resident vs. imported labour.

One of the latest schemes towards solving the great question of relieving congested districts by emigration to sparsely populated tracts in India is the proposal to induce a movement of the ryots of Bengal and the North West Provinces to cultivate the waste lands in the Assam valley. Peculiar interest attaches to this scheme, in that the meeting at which it was discussed was held at the London offices of the Indian Tea Association, and an appeal was made to the members present to give it their moral support. The scheme, which is supported by Government, is a benevolent one looking at it from one direction, i.e., that of the ryots. Viewing it, however, from the planters' stand-point, the position changes its aspect a great deal, and instead of giving the scheme their support, the representatives of the planting industry were almost unanimously opposed to it. The chief recruiting grounds for the tea labour force are situate in Bengal and the North West. Any considerable shifting of population would greatly intensify the present enormous difficulties of procuring an adequate and suitable labour supply. Resident labour looks very nice on paper, say the Assam planters, but which of the two would they prefer to do: cultivate their own lands at their own sweet will, or work on a plantation under strict surveillance? We trow, they answer, the latter.

And yet, comparing small things with big, local resident labour in the Nilgiris presents certain very distinct advantages. The Badagas, for instance, though extremely independent and by no means reliable, are nevertheless of the greatest use in executing certain contract works such as weeding, digging, pitting and the like. Few if any estates depend altogether on their aid, as the cultivation of their private lands always receives their first and earliest attention. Yet despite that fact, they form, and the local tribes in the Wynaad, Pulneys and other districts also form, one of the great advantages in planting in these localities.

Rubber.

This product is causing almost as much excitement among tropiculturists as rhea. And to add to the interest, the ignorance that

envelops both is equally dense. The only Eastern country where serious attempts to cultivate rubber have been made on a large scale are Assam and Ceylon. Both have practically abandoned its cultivation, leaving the meagre results of their experience at the disposal of experimenters. Briefly, the secret of their non-success lies in the adoption of wrong species of rubber. It should by no means prevent, however, Ceylon is it preventing, renewed trials with this fascinating staple. There seems to be no reasonable doubt whatever that the present huge consumption of rubber will keep prices for many a long year to come, not taking into account the depletion of the wild rubber-producing regions which operation goes on apace. With regard to depletion it is safe to say that of the many wild varieties of vine or tree used for producing the article, there is scarcely a single one which is not either utterly destroyed or seriously injured by the wasteful and ignorant methods employed. New regions are certainly being tapped, but on the other hand the supply from the older and more accessible sources is diminishing beyond doubt. Borneo and Burmah exported 11½ thousand cwt. in 1892 and only 7½ (thousand) in 1895. The United States' imports fell off 9½ million pounds in 1896 compared with the preceding year. From Brazil she received almost 6 million less; from the remainder of South America almost 1 million less; from Central America over ¼ million while from the East Indies the import was lessened by nearly one half and from Africa to one-fourteenth. Slackness of trade will scarcely account for all this. The writer in the *British North Borneo Herald* states, it will appear from the statistics of Para, the headquarters of South American rubber trade, that there was an increase in rubber received of 1,224 tons in 1896 as compared with 1895, but as many varieties of rubber from different countries are being shipped to the Para market in quantities that grow larger every year, the apparent excess does not prove that the supply from the Amazon Valley has increased, or even been maintained, notwithstanding the great activity among collectors in that region. The price of fine Para rubber to-day is evidence to the contrary. In London it is 5½d per lb. higher than at the same date in 1895, 6¼d. higher than in 1894, and 7½d. higher than in 1894, at the corresponding dates. We do not pretend to say there will be any actual panic in the market, as that would be absurd. The world's consumption is about 100 million pounds annually, of which one half is imported into Great Britain. The consumption has been gradually increasing during the past three years, as has the price likewise. Almost one third of the supply comes from Africa, and seems to depend almost altogether on the Dark Continent, how the position is to be maintained. And Africa is being exploited very thoroughly.

Steel track roads.

Perhaps there is no question that steel track roads excites greater interest than road-making. Good roads and plenty of them. Steel track roads seem as if we were going too strong, though, till we hear what the Road Commissioner of New Jersey says on the subject. The cheapest of all roads is perhaps the ordinary earth road, but for the next place steel tracks runs neck and neck with Macadam or Telford roads. And in up-keep expenses, and the huge weights that have to be drawn in steel tracks, it is a case of steel first and

st nowhere. Just listen to this: a horse will pull five times as much on steel as on a Macadam, and twenty times as much as on an ordinary dirt road. And again: the cost of freight in cents per ton per mile is as follows: On sand, 10 cents; on hard earth 20; on Macadam 5 to 10; on iron rails 1 cent.

Our readers must not run away with the idea that we wish to do away with the country cart. This way madness lies. No, simply to lay down steel gutter tracks sufficiently wide and with low flanges, so that the ordinary cart wheel can readily get in and out of them. The gauge of the local bandy would of course be taken as the standard, and, without disturbing the ancient carrying conditions in the slightest, traffic would be enormously increased and the cost equally lessened. The necessity of repairs to an ordinary road are due in great part to the action of water on the wheel ruts. By the use of steel gutter tracks, no wash would take place at all, as the water would find an excellent and practically indestructible conduit in the gutter tracks.

From the comparative rates of haulage already given, it would be safe to estimate the cost of freight on our ordinary district road as at least 30 times more than it would be on steel rails. In other words, for every thirty rupees now spent per ton, we should only spend one. The matter, we opine, is worth taking up and testing, for, if practicable, it is almost impossible to over-rate its importance to India, the land of scanty railways and immense distance.

Since writing the above, we have seen the matter referred to by an American exchange, the *American Grocer*, which gives a description of the steel tracks made by the O'Donnell Steel Track Highway Company, 143, Chambers Street, New York. Hon. John O'Donnell, late State Senator and State Railroad Commissioner, obtained a patent last November, and is the General Manager of the Company. The steel track is described as follows:—

"The track is five inches wide on the bottom, with half inch raised sides made of half-inch steel. It is laid on a longitudinal timber resting on ties. The middle between the tracks is filled in with stone and rounded up, the water running into the tracks and to the sides of the road by conduits from the steel track. The great difficulty in all road construction has been to take care of the rainfall on the road. If the water penetrates the crust of the road, the frost inevitably follows and the road is ruined. This gutter track takes care of the water perfectly."

Our contemporary supports our remarks as to the enormous prospective value of the introduction of the system. It says:—

"If all the advantages claimed by the Company prove true—and the reasons advanced seem well grounded—the steel track highway system will mark a new era. No invention since the steam age will so generally affect inland commerce and freight and transportation as this steel track highway. It means a revolution in the mode of business. It will be an active competitor with railroads in moving slow freight, for a horse will draw twenty times as much on a steel track as on a dirt road.

"The cost of the steel track all ready to lay is \$1,500 per mile. To this must be added the cost of ties, a longitudinal track timber, and the filling in of the track."

U. P. A. S. I. LEAVES.

(GATHERED BY THE SECRETARY, U. P. A. S. I.)

GOVERNMENT has decided that though the Report of the South of India Planters' Enquiry Committee is not strictly

confidential, it is desirable that all discussions of it by District Planting Associations and the U. P. A. S. I. should be held in Committee, and that no press report of the proceedings should appear.

Honorary Secretaries of District Planting Associations are requested to take special note of the above.

In this connection it may be remarked that a copy of Act XIII. of 1859 was published in the U. P. A. S. I. Book of Proceedings, 1894, to which reference can be made by all who wish to study the Act. A copy of Act V. of 1866 appeared in *Planting Opinion* of 26th June 1897, so that this also can be referred to without difficulty.

Surgeon-Major Ronald Ross has kindly intimated that he intends to furnish a brief paper on the Malaria question, for consideration at the Annual Meeting; so this subject will be added to the Agenda.

A ruling of the Madras High Court with reference to Act XIII. of 1859 appeared in the *Madras Mail* of 15th instant, and is republished in the present issue of *Planting Opinion*. No detailed circular will be issued on this subject, but merely one calling attention to these publications, either of which provides planters with particulars of the Court's decision. The ruling adds a fresh item to the glad tidings that will be formally announced at the Annual Meeting of the U. P. A.

The following are the subjects entered on the Agenda of the Annual Meeting to commence on 9th proximo:—

AGENDA.

1. Secretary's Report and Accounts.
2. Election of Office-bearers.
3. The Report of the South of India Planters' Enquiry Committee:—
 - (a) The Labour Question.
 - (b) Coffee-stealing.
4. U. P. A. Finances:
 - (a) Method of raising funds.
 - (b) Partition of funds between Tea and Coffee.
 - (c) Reserve Fund.
 - (d) Reporter's Fee.
5. Registration of the Association.
6. Constitution of the Association.

Revision of rules: (a) general, if Registration be decided upon; (b) with special reference to the formation of the Committee.
7. The Casket and Address to the Queen.
8. Subscriptions in default.
9. Scientific Investigation.
10. Malaria.
11. References to the High Court under Act XIII. of 1859.
12. Employment of Counsel *re* Act XIII. of 1859.
13. Roads and Communications.
14. "Planting Opinion."

U. P. A. S. I. FINANCES.

In the report of the last meeting of the Central Travancore P. A., which is given on another page, will be found a brief sketch by Mr. Acworth of his financial scheme in connection with the U. P. A. S. I. As Mr. Acworth remarks, Mr. Parsons' Individual Membership scheme has not "caught on." Besides this, Mr. Parsons realises that he cannot hope to get his scheme adopted by delegates who are instructed to vote to order. In all probability, therefore,

he will not bring it forward at the Annual Meeting next month. In that case Mr. Acworth should be pretty sure of a favourable hearing. Some Associations have from the beginning leaned towards a system of subscriptions in proportion to acreage under cultivation; Mr. Acworth meets their ideas. Others, who prefer a "lump sum" subscription, can make the necessary payment accordingly. Then, too, any Associations that are in favour of individual votes would seem to be at perfect liberty to sell or dispose of their votes, or a portion of them, to individual members of their respective Associations. If the scheme be adopted, and any Association takes this course, the Individual Vote will be put to a test, though the constitution of the U. P. A. S. I. as an Association of Associations, not of individuals, will remain unchanged. The income to be raised under the scheme would admit of the steady construction of a solid Reserve Fund. Progress in this respect would be less rapid than some planters desire; but however satisfactory it might be to have a magnificent Reserve Fund to contemplate, there can be little doubt that an ample annual income and steady allotments to the Reserve, year after year, will mean, in the long run, a more healthy and more useful state of affairs than that which a reserve of Rs.2,00,000 or so would furnish, unless also backed up by liberal annual subscriptions. Planters are bent upon establishing a Reserve, and they incline to regard it as a permanent nest-egg. They must, however, recollect that if it should be a nest-egg that lies idle and does not stimulate the lying propensities of the planting poultry, it will be useless. They have to consider not merely how to *construct* a Reserve Fund, but how to *utilise* it. Mr. Acworth has pointed out an excellent way on the one hand; no doubt there will be also some discussion at Bangalore next month as to whether the money is to be devoted to this object or that, or to be merely "sat upon" so that the Executive hen may always have the pleasure of feeling that she has *something* under her. We would strongly urge that Mr. Acworth's scheme should be regarded *first* as a scheme for the provision of an ample annual income, and only in a secondary degree as one for the establishment of a reserve. In other words, that planters should proceed on mercantile lines, and carry over to the Reserve each year such surplus funds as they find themselves able to spare. Unless they do this, they may at any time find that while they have a substantial nest-egg to gaze upon they have not an anna in their coffers to meet current expenses. Under such circumstances a reserve might easily become an absurdity.

"EVERY PLANTER HIS OWN ANALYST."

QUITE a fetching title, isn't it? and ought to attract the attention we wish for it. Everyone knows what soil is, and some know—but very few—what soil is good and what is bad *before* they plant in it. The usual thing is to obtain the knowledge afterwards, but this sort of method of obtaining the opinion of plants is too expensive to be useful. And yet it is not so very difficult to find out if a soil is good or bad. The best soil should contain about 50 to 70 per cent. of sand in it, from 20 to 30 per cent. of clay and from 5 to 10 per cent. each of pulverized limestone (calcareous material) and humus. Briefly, the reason why good soils should contain the above mixture is that clay alone would be too

cold and too heavy, sand alone too dry and too loose, without humus and lime the formation of nitrates would be practically impossible.

The next thing, after knowing what the best soil should be, is for the planter to find out how nearly his own land approaches the standard given. This he can do easily enough. Let him carefully weigh, say, half a pound of thoroughly dried soil which fairly represents his field block. Put this in a bucket with water and thoroughly stir it. The whole of the clay and humus, and a large portion of the limestone, if present, may be removed by simply pouring the discoloured water into another vessel. This should be repeated until the sand is washed clean of clay and organic substances. The sand must then be dried and weighed. If there is a quarter of a pound of it, the soil contains 50 per cent. of sand, and may probably be classed as a light sandy loam. But if it gives seven or eight ounces of dry sand, it is a sandy soil. In other words, if there are only ten parts in a hundred of clay in a sandy soil; ten to forty per cent. of clay it is a sandy loam; from forty to seventy per cent. of clay, a loamy soil; seventy to eighty-five, a clay loam; eighty-five to ninety-five, a strong clay.

The clay which is in the water that is poured off will soon settle, and may in turn be dried and weighed. This is a very simple and valuable, though rough, way of soil analysis—is it not?

If a planter sets seriously to work to judge for himself the value of his soils, there is a vast amount of knowledge he can pick up bit by bit. Knowledge of real practical value, not mere empty theory. Information that will guide almost every act of tillage, draining and manuring. Knowing what a soil wants, it is comparatively easy to supply its needs. Just to mention a last point particularly apposite in this monsoon season: have you ever had the curiosity to examine the discoloured water that flows down your drains after a heavy shower; have you ever thought of smelling or tasting it? Try it, and you will be very soon convinced that the peculiar smell and taste is due to the nitrates and ammonia robbed from your soil. Having arrived so far, we wonder if you would be sufficiently thoughtful to try and arrest this waste, even if you know how. Nitrates are soluble, as you have proved, and being soluble, can be taken up by coffee or tea roots. Clearly the waste that occurs must be put down to the fact that the feeding rootlets of tea or coffee are not sufficient to hold the excess of nitrates. What can you do? Try letting weeds grow a while and act as savings banks till the monsoon is over; you will get your otherwise wasted nitrates almost all back again. To test this interesting point further, examine carefully the drainage water off a clean weed and a weedy field in the monsoon: which gives the greater flow, and which is the darkest coloured? You will have to wait long for this answer.

ACT XIII OF 1859.

THE *Madras Mail* of 15th instant contains the following among items of Legal Intelligence:—

THE MADRAS HIGH COURT—15TH JULY.

(Before the CHIEF JUSTICE and Mr. JUSTICE SHEPARD.)
Act XIII. of 1859.

Mr. E. B. Powell, Public Prosecutor, at the instance of the District Magistrates of Trichinopoly and South Canara argued two revised

cases in which an authoritative ruling of the High Court was desired to whether warrants issued under Section 2 of Act XIII. of 1859 could be executed in localities outside the jurisdiction of the Magistrate issuing such warrant. The reference was made under an order of the Government of India, dated the 26th October, 1896, the material portion of which ran as follows:—

The Government of India are advised that there is reasonable room for doubt whether the provisions of the Code of Criminal Procedure, 1882, regarding warrants apply to warrants issued under Section 1 of Act XIII. of 1859, and whether a warrant under that Act can be executed at all outside the jurisdiction of the Court which issues it. On the one hand the words of Section 83 of the Code are unqualified, and it may appear to apply to all warrants. On the other hand they may be restricted to warrants "issued under the Code" by virtue of Sections 75 and 93, which seem to apply to the whole chapter. It is to be noted that though a warrant may issue under Section 1 of Act XIII. of 1859, no "offence" has been committed until the Magistrate has made an order, and that order has been obeyed. On grounds of administrative policy, it is clearly inexpedient that the very special procedure provided by that Act, which applies in certain cases penal provisions to the breach of a civil contract, should be capable of being employed to drag labourers many hundred miles from their homes to answer a charge of such breach; and if it should be decided that the existing law permits of such proceedings, it will be necessary to consider the propriety of amending it. The Government of India are, however, unwilling to bring the Act in question under discussion unless the necessity for its amendment is clearly made out; and they therefore desire to obtain an authoritative ruling upon the point in doubt.

Mr. Powell said that opinions on the point were divided, the Government of India being of opinion that such warrants could not run outside the jurisdiction of the issuing Magistrate, the other side holding *contra*, and he had been asked to place both sides of the question before their Lordships and to obtain an authoritative ruling. Section 2 of Act XIII. of 1859 gave a Magistrate power, on a complaint for fraudulent breach of contract, by an employer to issue a warrant to apprehend the offender for the purpose of making an enquiry into the complaint and deciding if a breach of contract had taken place, the manner in which such breach of contract might be dealt with, or the offender punished. Section 83 of the Criminal Procedure Code gave power for the issue of warrants outside a Magistrate's jurisdiction, but Sections 75 and 93 of the same Code appeared to limit it to warrants issued under that Code alone.

Collins, C. J.—You are now going to argue that a warrant of arrest under Act XIII. of 1859 should run outside the jurisdiction of the issuing Magistrate.

Mr. Powell.—Yes. It is contended by the Government of India that under definition of "offence" in the Criminal Procedure Code no act or omission has taken place which is punishable under that Code, for it was not the breach of contract that was punishable under Act XIII. of 1859, but the disobedience of the order of the Magistrate that was made punishable.

Shephard, J.—Why do you assume that the sections relating to warrants are limited to offences under the Criminal Procedure Code?

Mr. Powell.—That is the contention of the Government of India, as will be seen from their letter.

Shephard, J.—Suppose then that the warrant sections of the Criminal Procedure Code do not apply to Act XIII., what provision is there for such warrants at all?

Mr. Powell.—None whatever, and that is the argument of the other side, and to put that forward it will be necessary to trace the law regulating the procedure from the date of Act XIII. Act VII. of 1854 provided for the execution of warrants in places outside the jurisdiction of authorities issuing them. This, however, applied only to heinous offences, but Act XVII. of 1856 extended the provisions to all criminal processes whatever. That Criminal Procedure Code was repealed by XVII. of 1862, in which the language with regard to this particular matter was very similar. That Code permitted the execution of a warrant in another jurisdiction in the case of an offence supposed to have been committed. It did not define the word "offence", and the only Section giving jurisdiction to Courts in respect of special laws was Section 21 which gave it in respect of offences under such laws. Either, therefore, the Legislature considered breaches of contract under Act XIII. of 1859 to be offences, or it deliberately excluded them from the jurisdiction of the Courts it constituted by the mere use of an undefined word. It does not seem reasonable that the latter alternative can be accepted.

Collins, C. J.—I suppose there is no doubt that the offence—I call it an offence—charged was under Section 1 of the Labourers' Act?

Mr. Powell.—There is no question about that. To return, however, to the interpretation of the Codes, similar remarks to those mentioned above apply to the next Procedure Code X. of 1872. Again there was no definition of the word "offence." And by Sections 7 and 8 all criminal trials, and by Sections 6 all enquiries by Magistrates, should be held according to the provisions of the Code, and it cannot be denied that even in the preliminary stage a case under Act XIII. of 1859 is either a trial or an enquiry. The only reported case I can find with reference to this is whether a case under Act XIII. of 1859 can be tried summarily. The Sub-Magistrate of Chingleput decided a case under the Act summarily. The Madras High Court held that cases under the Act were enquiries of a special character and should be conducted with patience and care. The point deserving of notice in this case, however, was that all the Courts dealing with that case accepted the fact that the Criminal Procedure Code governed Act XII. of 1859.

Shephard, J.—That was the Code of 1872?

Mr. Powell.—Yes. It seems pretty clear that all the old Codes applied to Act XIII. of 1859. If the new code does not apply we have the strange fact that the Legislature, without specific mention, had deliberately cut away from that Act all directions and powers of procedure which had previously been in force with regard to every proceeding prior to disobedience of the Magistrate's order. If the process cannot be executed beyond the jurisdiction of the Sub-Magistrate issuing it, *i.e.* if the Sub-Magistrate of Coonoor cannot issue any summons or warrant beyond a radius of 5 or 6 miles, and can neither summon a defaulting cooly from Ootacamund nor issue a bailable warrant for him in Mettapolliem—Act XIII. as a safeguard of the planting interest, is practically dead.

Their Lordships delivered the following judgment:—

We are clearly of opinion that Section 83 of the Criminal Procedure Code is applicable to warrants issued under provisions of Act XIII. of 1859. There are no words in that Section limiting the operation of it to warrants issued under the Code. The reference to warrants issued under the Code made in Sections 75 and 93 cannot, we think, be taken to have the effect suggested. It cannot be supposed that if when the Codes of 1861 and 1872 were in force, the Sections in them corresponding to Section 83 of the present Code were applicable to warrants issued under Act XIII. of 1859, that the state of the law was intended to be altered under the Code of 1882. And we hold that none of the provisions in Chapter VI. of the Code apply to such warrants, which may lead up to the conclusion that there is no provision made for the issue or execution of them. It is not necessary to say whether under Act XIII. of 1859 breach of contract constituted an offence. The language of the Act appears to us to indicate that such was the intention of the Legislature. At any rate the Act authorises a Magistrate, on complaints being made, to issue a warrant, the only question being whether the provisions of the Criminal Procedure Code apply to that warrant. We think the provisions in question do apply.

RHEA FOR SOUTH INDIA.

We are indebted to Mr. John Cameron, Superintendent of the Mysore Government Gardens, for the following excellent *précis* on the Rhea Fibre Plant. The hints for South India planters will be found especially valuable:—

MEMORANDUM ON THE RHEA-FIBRE PLANT.

Boehmeria nivea.—Hook. and Arn.

Origin of botanical name.

The genus *Boehmeria* was created in honor of George Rudolph Boehmer, a German botanist. The specific name, *nivea*, (snowy) has reference to the underside of the leaf, which is white like snow.

Figure and description.

Boehmeria nivea is a soft-wooded shrub of the nettle family, *Urticaceæ*. But it differs from the proper nettle in having no stinging hairs. Root tuberous and fibrous. Shoots mostly simple and cane-like; herbaceous at first but soon becoming woody. When full grown they vary in height from four to eight feet, or even higher where the conditions of growth are exceptionally favourable. Leaves alternate, long-petioled, hairy, broadly cordate, acuminate, coarsely toothed, and snow-white on the underside. The unisexual flowers

are somewhat crowded in simple or branching panicles in the axils of the leaves. In every case the pistillate or female flowers occupy the upper position, the male or staminate flowers being found at the base of the panicle. The plant has not been known to produce fruit or seed in Mysore, where it is an exotic, hence these parts are not figured.

Habitat and distribution.

The Rhea plant is truly indigenous to the Malay Islands, China, and Japan. But like other useful plants it has been cultivated and domesticated to some extent in many other parts of the world, as in India, Brazil, Paraguay, Ceylon, Australia, and the warmer parts of Europe. It is, in short, a subtropical plant requiring a copious rainfall (otherwise irrigation) to bring its growth to perfection.

Propagation.

To secure seed, the plants cultivated in this country require very special treatment. But even then the supply is usually scanty and precarious. It is fortunate, therefore, that the Rhea plant is so readily propagated by the division of its tubers, offsets, and stems. The best plan is to lift a matured plant bodily for the purpose of division. The tubers, which resemble small potatoes, can then be dibbled into the nursery separately, the larger ones possessing several "eyes" can also be cut into "sets" as in the esculent just referred to. Then by careful handling, a sturdy rootstock can be separated into many parts, each having a little root and stem. Finally, the cane or stem can be reduced into cuttings of 5-6 inches in length. The best cuttings are obtained from the matured wood, but treated under glass, in fine sand, the tender or herbaceous portions of the stem will also take root. By the above methods many thousands of plants can be raised from even a limited stock. But to insure success it should be done during the growing season. In this climate, old stools and freshly rooted slips are practically as hardy as nettles, so that once established the plant is propagated without risk or even much trouble. The Botanical Gardens possess several thousand plants from which young stock can be raised in quantity. Rhea has also been domesticated to some extent in the coffee districts, so that even in the absence of seed, we have ample material to propagate from.

Sites for natural growth.

In Mysore, the hill country included in the districts of Hassan, Kadir, and Shimoga, affords the position and climate best suited to the hardy growth of Rhea, and in the most favourable situations it is not improbable but the plant would run wild to some extent. What is really required in this new product is its possession in great quantity raised at a nominal cost. It should therefore be encouraged to spread in suitable localities. It might, for instance, replace *Lantana camara*, with which it is nearly equally hardy, but less aggressive and far more useful.

Sites for cultivation.

It follows that where the plant will thrive without help it will also be the most productive under liberal cultivation. Extensive areas of comparatively open forest land having a good head-flow of water from some perennial stream would answer well, providing that the soil is fertile and open. Good drainage is a very essential condition of this culture, so that the sloping sides of hills and sholas might be preferable to lands situated on flats and in basins. The annual rainfall should not be less than 50 inches and would not hurt growth if it reached 100. Wet lands on the sides of rivers and canals bordering the Malnad would only be suitable if they are porous and easily drained. But in all probability the existing wet crops are much more profitable than Rhea is ever likely to become under similar conditions of cultivation.

Cultivation.

Virgin forest soil, and good loam with a liberal admixture of sand, are equally suitable for the vigorous growth of Rhea. But there must be no stagnation of water, hence it is necessary that plots demarcated for planting should be thoroughly opened by the plough. This is best done at the close of the monsoon when the surface herbage can be ploughed in and left to rot during the dry season. At the bursting of the South-West Monsoon another thorough ploughing will be needed to make the surface soil soft and workable. Rooted plants of Rhea can then be put out in the field at 3-4 feet apart. The crop will not be a full one during the first year, but in the 2nd, 3rd and 4th years it will be full. Under good cultivation the young plants throw out many suckers or offsets, and after 12-15 months of continual growth the intervening spaces will be nearly full of stems of various sizes. After the fourth year the growth becomes stunted and the fibre deteriorates in length, texture, and value. When this takes place the field has to be broken up and resuscitate the original field, a large amount of manure would

have to be applied in the first instance and at reasonable intervals subsequently. After the first planting, field operations consist of weeding, hoeing, and removing the matured stems.

With continual growth all the year round, supported by irrigation during the dry months, an average yield will be three cuttings but under exceptional circumstances even four cuttings may be obtained.

Possible yield per acre.

The outturn of fibre per acre differs according to climate and situation. But the average results under proper cultivation are not likely to exceed eight tons of ribbon (stripped bark) per acre. At any rate a larger quantity than this should not be expected from Indian cultivation.

Present market value.

Bales of assorted ribbons are now purchased on contract by a home company at £1 per ton. But it is very doubtful if this would be maintained in the open market. Any quotation of value at the present stage of the industry must therefore be more or less unreliable. But supposing the yield in India is only six tons per annum, and the market value £5 per ton, an acre of Rhea would be worth £30 to the cultivator.

J. CAMERON,

SUPERINTENDENT, MYSORE GOVERNMENT

BOTANIC GARDENS, Bangalore

LETTERS TO THE EDITOR.

WHITE ANTS EATING COFFEE TREES.

SIR,—In your Coffee Notes of 3rd July, with reference to white ants attacking coffee trees on the Shiré Highlands, you say you have never seen or heard of such a thing in India.

Amongst a few 16-year old trees on my tote near Bangalore these pests have lately killed one tree, having riddled the above and under-ground portion of the stem with their burrows. I have also laid open the roots of another tree, which was evidently suffering from some complaint, and found the same pests just commencing there also.

"ALOE KO"

BLACK BUG IN TEA: A QUERY.

SIR,—I noticed the other day, much to my disgust, a small patch of tea attacked by "black bug." Some two or three days ago the same field had a very bad go. It was cut down to the collar, the prunings burnt, and the ground sprinkled with lime. About a pound of bone and poonac was given to each tree to enable them to recover from the shock. The jât is a rather Hybrid.

The question is this: how to treat the trees, so as to destroy the pest and stop its spread? I cannot collar prune again so short an interval for fear of killing the trees outright. Spraying is unsatisfactory, and beyond some emulsion to choke the insects (for being "sucking" and not "biting" insects I conceive it of no use to attempt to poison their food by arsenical washes) there would be little use in spraying.

Que faire? I propose pruning the young wood to within 12 inches or so of the low prune, collecting and burning all the prunings, washing the stumps with cow-dung and ashes, forking the piece thoroughly, and manuring with peat thereafter.

I had thought of cutting down the trees to the ground and burning the prunings *in situ*, but feel a little timid about the results of such drastic treatment! Any hints would be most oblige one who much wishes to give a sure and painful

DEATH TO B

GIVING OF CHARACTERS.

SIR,—Some time ago one of your correspondents wrote in indignant terms of the indiscriminate way that some people give characters (I think it must be the juvenile element this time)—

written characters or "chits" to natives generally. No doubt many of these easily won documents are bestowed in the very blindness of the writers' heart, at the same time but a little consideration would show that this mode of humouring Ramawamy is very often the means of placing a weapon in his hand that he is not at all entitled to, and may be the means of leading some unsophisticated new-arrival (or should I say "creeper") astray.

I have come across some very flattering testimonials of this nature, but perhaps the sample I give below may best illustrate what, in my opinion, ought to be avoided:—

"June 28th, 1897.

—Estate.

"Bearer is the best 'Chuckler' I have seen since I have been in India—he can mend all sorts of saddlery, boots, etc., as good as any shopman at Bangalore.

—"(Signature)——"

To lend additional charm, I suppose the above was written on beautifully crested note paper with the significant motto

"PATIENTIA ET PERSEVERANTIA."

SHORT CROPS.

SIR,—“Perseverance” has given us an interesting problem, but one which I fear there is little chance of solving. Each man has his theory; one says leaf-disease, another the heavy monsoon, another early rain, and so we go on, with no facts to prove what is the cause of the exceptionally heavy failure under which we are suffering. Under these circumstances I am afraid opinions can help us but little, and I confess I am unable to form one with any degree of satisfaction to myself. One would naturally suppose after a heavy monsoon crops would be poor owing to the nitrates being washed out of the soil by the heavy rainfall, but I don't think failure to set can be put down to this. Leaf-disease, although the cause of small crops, and to some extent responsible for failure, has I think a greater tendency to prevent the formation of spike than to cause the blossom to fail. I have known years in which leaf disease was even worse than we have just experienced, with nothing like the percentage of failure. The amount of failure is this year quite exceptional, and I am inclined to put the cause down to “Season,” a thing it is impossible to explain but of the utmost importance where crops are concerned. I do not for a moment think we are likely to suffer in the same manner year after year. We have our healthy seasons, and the reverse, fruit seasons, and seasons almost without fruit, and the present year is without doubt a bad fruit year. Not only is the coffee crop poor, but this year the jungle trees have little or no fruit, which can hardly be put down to leaf-disease. With fairly good rains and a fine show of blossom, I doubt if even such general failure has before been experienced in Mysore as we have to face this year. I say “unfavourable season,” which I am afraid is admitting I know nothing about it. I have, however, no hesitation in expressing my opinion that leaf-disease is the cause of small crops, and anything which can be found to prevent, cure, or even mitigate the attack would be a God-send to planters. After all these years a cure seems hopeless, but I think to a great extent it may be prevented. I have found the application of Nitrate of Soda and Potash mitigate the attack greatly, if applied at the right time. I have also experimented with Sulphate of Copper and Sulphate of Iron, and I am of an opinion the disease may be prevented with Sulphate of Copper if the conditions for its application are favourable. It is necessary to treat the trees at least three times, and this is almost an impossibility where the rainfall is heavy and of long duration, but on estates where the monsoon is broken up by sunny days, it would be quite possible to carry out the treatment on a small estate. The idea of burning all the fallen leaves and prunings would be labour lost, as experiment shows

that after the leaves have been on the ground a short time the spores all die, and will not germinate under any conditions. Directly the spore ceases to obtain nourishment from the leaf it is killed by light.

KADUR, 3rd July 1897.

MYSOORE PLANTER.

LEGUMINOUS SHADE.

E. Lithosperma v. Nitrates.

DEAR SIR,—In P. O. of the 26th ultimo, H. G. R. in his friendly criticism of “Coffee Cultivation without Manure” takes exception to my writing that burying *E. Lithosperma* twigs is supplying coffee with nitrates ready made. Nitrates ready made is an expression I do not think I have made use of, but I believe I wrote that manuring with *E. L.* was practically manuring with nitrates. That this should be understood in the sense H. G. R. has understood it is very natural, and I am much indebted to him for calling my attention to it and giving me an opportunity of more fully explaining my meaning. There may not appear at first sight much difference between the two expressions; but in writing “practically manuring with nitrates” it was in reference to the extreme rapidity of decay that *E. L.* loppings undergo. I quite agree with your correspondent that nitrogen in *E. L.* is “Organic Nitrogen” and not in the same form as in nitrates; but from a point of view of availability there is Organic Nitrogen and Organic Nitrogen. The first step in the natural manufacture of nitrates is the liberation in the form of ammonia of the nitrogen in the organic matter; once in the form of ammonia it is converted by the nitrifying organisms into nitric acid, when it combines with lime, potash or soda to form nitrates. That the nitrogen in *E. L.* is very quickly converted into ammonia anybody can easily ascertain, by the simple expedient of leaving a heap of *E. G.* loppings to lie and sweat for two or three days, when smelling a sample from the interior of the heap will afford very satisfactory nasal evidence that the nitrogen is being liberated. Nitrogen in *E. L.* twigs is I think from this an easily get-at-able form. To give an extreme instance of unavailable organic nitrogen, I might take the case of teak. There is a certain amount of nitrogen in teak, but manuring coffee with teak blocks would certainly be an unsatisfactory way of supplying it with nitrogen.

There is no doubt that the quick action of a manure is in proportion to its complete decay, and that is why cattle manure is such unsatisfactory stuff for quick action, and this doubtless has led to the large and increasing use of chemical manures. It was because of the decay and complete disappearance of *E. L.* loppings in so short a time that I said that manuring with them was practically manuring with nitrates.

In a manure the nitrogen of which is so rapidly turned into ammonia as is the case with *E. L.*, I think we are justified in ranking it very highly as a fertiliser, as once we have got the nitrogen converted into ammonia, the rest is, I should fancy, soon accomplished by the nitrifying organisms of which there is every reason to think there is an abundance on all coffee estates. To give a further instance of the quick acting and efficiency of green manures we have the case of the paddy cultivator who uses them for a three-month crop, so that in three months the nitrogen is liberated, manufactured into nitrates, and taken up by the crop. If this is the case with *Tephrosia Purpurea* used as a paddy manure, the same rapidity of action might be more than expected from *E. L.* as the shoots are so much more succulent, and I should feel inclined to state as a fact that the rapidity of decay is in proportion to the succulence of the green manure buried. I hope I have made clear that in writing that manuring with *E. L.* was practically manuring with nitrates I was alluding to the extreme rapidity of decay that *E. L.* undergoes, and which I believe fully justifies me in placing as high a value on the nitrogen in *E. L.* as on the nitric acid in nitrates,

as nitrogen once liberated as ammonia is in an ordinary fertile soil very rapidly converted into nitrates by Nature's process. I hope H. G. R. will excuse me if I cannot agree with him when he says that the danger of too much humus is likely to arise with green manuring. Too much humus is a theoretical danger that I don't think is ever likely to arise in practical coffee cultivation in S. India. Coffee is an essentially humus loving plant. The growth of a new coffee clearing before any humus has been lost by wash is always infinitely superior to that on land that has been opened only a few years, and the only important change that has taken place is the loss of humus. On the hills of S. India, I am afraid the difficulty will be in the future as it has been in the past to prevent loss of humus rather than danger from excess. In contrasting green manure with nitrates, a green manure like E. L. seems to me to enjoy certain advantages over a manure like nitrate of soda. It is very easy to apply a larger amount of nitrogen in, as I hope I have demonstrated, a very readily available form than would be applied in the form of nitric acid in an ordinary application of Nitrate of Soda, and this at a nominal cost; there is also the advantage of E. L. containing a considerable supply of valuable mineral constituents that coffee is in need of. The great advantage of E. L. to my mind over ordinary manure is the extreme rapidity with which it disappears, in fact is completely digested, and thus affording an unfailing and constant supply of everything coffee wants. This, I believe, affords the true explanation of it when tried as a coffee manure.

B. NELSON.

ARIENKOW, SHENCOTTAH, 8th July 1897.

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.64	"	Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE.

COFFEE.

One ton per acre.

A Sumatra planter writes to a local paper from Serdang that a certain coffee estate in the vicinity is picking over one ton per acre, and doubts if British India, Ceylon or Java has ever equalled it. He admits, by inference, however, that this yield is something quite exceptional, even for Sumatra. So we should imagine.

Cuttings.

A CORRESPONDENT, "G. E. R.," writes us with reference to the paragraph on this subject in our issue of 3rd July:—

"All the cuttings that I have tried came to a certain height and then died, of course. I do not know if this is always the case. What first made me try cuttings was, when making a nursery, the coolies cut some jungle plants (coffee) and made stakes of them to keep the soil in; these all sprouted and when taken out about a year later had five or six suckers on them from 6 inches to 1 ft. high. I then planted out a few; they did well till they were a couple of feet high and then blacked and died back, the stem remaining green and sprouting out again. I can't put any reason forward for this, but at the time put it down to the tap root not being able to force its way down and on pulling them up found a root about 6 inches long with a lot of feeding roots besides. I should like to know the reason why they died."

If we might hazard an answer, we would suggest that wood, such as the stakes were presumably made of, hardly the best material from which to make good cuttings. If "G. E. R." would try making some cuttings in, say, April or May, from young pencil-wood, say, $\frac{1}{4}$ to $\frac{1}{2}$ an inch diameter, with sprouting "eyes," the results might possibly be different. The subject being, as we pointed out last week, of such importance in the propagation of good stock, perhaps Mr. Cameron, of the Mysore Government Gardens, might very kindly oblige with some simple directions as to the best methods of striking coffee cuttings.

The Market.

SAYS the *P. M. Review* for 11 June:—

Business has continued very quiet throughout the week, demand having shown a very decided falling off both for home consumption and also for export. The latter has no doubt been influenced by the fall in the terminal market, caused by an increase in the daily receipts at Rio and Santos of the new crop now beginning to come forward. But though the demand has been slack there has been some evidence of more confidence, and prices have been fairly well maintained, while some kinds, notably foxy goods from Guatemala, have sold at a slight advance from the depressed rates of last week. There has also been some inquiry privately for stock from East India and for London cleaned Costa Rica, and sales are reported at 2s. to 3s. per cwt. above the prices obtained at auction a few weeks ago. The Dutch Trading Company have advertised their next sale for Tuesday, when 19,100 bags and 40 cases will be offered against 26,300 bags and 70 cases at the corresponding sale last year.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended June 12, 1897.	Tons. 218	Tons. 304	Tons. 500	Tons. 449	Tons. 14,059	Tons. 12,000
For the 23 weeks ended June 12, 1897.	6,832	6,912	9,442	10,813	...	...

OFFICIAL STATISTICS OF THE COFFEE TRADE OF THE UNITED KINGDOM.

	1 Month ended May 31.			5 Months ended May 31.		
	1895	1896	1897	1895	1896	1897
Imports	94,549	107,814	118,623	504,116	456,573	510,000
Home Consumption.	28,602	20,935	24,376	114,952	108,008	110,000
Exports	54,018	67,703	60,247	197,501	216,956	190,000
Total Deliveries	82,680	88,638	84,623	312,453	324,964	270,000
Stock on May 31	285,183	279,542	398,954	...	...	...

Leaf disease and electro-culture.

It appears that interest in the application of electricity to agriculture, or in other words of electro-culture, is again reviving. Many have been the experiments made, and isolated remarkable results have been obtained from time to time. From all we gather on the subject, the most economical manner of adopting electro-culture is by erecting simple crown rods in the field, connected by means of underground wires. The theory is that the silent discharges of

electricity continually passing from the higher air strata to the earth will be concentrated in the field thus treated, with great advantages in the way of increased yield and freedom from disease. This last word, disease, connects our remarks with the heading of this note: to wit, the possibilities of protecting coffee against the attacks of leaf-disease by the help of electro-culture. The apparatus, which has been fully explained to us by an expert electrician of many years' standing, is extremely simple and very cheap. Wooden poles six feet or less in height are planted firmly in the land some 10 yds. or so apart, quincunx fashion. To the tops of the poles are attached "crown collectors," which are simple metal discs with a serrated upright rim. A hole in the centre of the disc enables them to be attached to the post, which is insulated by means of the extremity being covered with glass or rubber (an empty glass bottle does very well). Each collector is connected with each other by wires, which again run down the pole, properly insulated, into the soil some 18 inches below the surface. These wires extend horizontally some few feet from the poles. The continuous current of electricity which flows along the wires is supposed to greatly stimulate the nitrifying organisms and to be highly deleterious to the existence of fungoid pests. The experiment would be very cheap, simple and easily carried out.

Besides the influence of the current, the effects of electric light have in many cases proved to be of great value to the plants subjected to their influence. The quality of lettuces, for instance, thus treated, has been proved to be ten per cent. better, and in growth fifteen per cent. quicker, than plants cultivated in otherwise identically similar conditions. Some very thorough investigations are now taking place in the Agricultural Colleges of Amherst and Corvett, both with the electric light and underground currents.

LIBERIAN COFFEE.

THE extension of Liberian coffee cultivation in S. India, in many cases in an experimental stage, in others on a more extensive scale, is ample excuse for my calling attention to the results actually obtained so far in Ceylon, and a district where there is very old Liberian coffee not a thousand miles from Cape Comorin. In Ceylon in the latter seventies there was a considerable amount of land planted with what was fondly hoped was going to replace the Arabian variety. The original plants were planted at too high an elevation, and not making any satisfactory growth were removed to a lower elevation, where they thrived admirably, and I believe brought in the fortunate proprietors as much as 4 as. a cherry. What has become of all the Liberian planted in Ceylon at that time is not hard to say, as it has practically disappeared, and to such an extent that not long ago I saw Liberian coffee cultivation alluded to as a new product in a Ceylon paper. The causes of its disappearance were various, in many places the soil was unsuitable and probably the treatment, and the coffee more or less came to an untimely end by starvation, death being in many cases accelerated by a mamoty. The low price of the coffee was another great cause; I think about 1884 it was only worth some Rs.5 a bushel of rice coffee. This cause led to the cutting out of some decent coffee, some that I saw being so well grown that hitching an elephant on to the trees was considered a cheaper and more efficacious system of removal than by coolies. There was yet another cause, a cause that I hope Indian planters may

be spared, and that was bug. Bug obtained such a hold on the coffee, and thrived so well, that the only way of getting rid of the bug was cutting out the coffee. At the present day I see the Delgolle Company refer to Liberian coffee, of which they have a considerable acreage of young coffee, in a most discouraging way, both as regards present crop and future prospects. As the result of all the Ceylon experience, it may safely be inferred that Liberian coffee wants good soil. Crossing the water there is some old Liberian to be found which bore well and steadily for years, but is now unfortunately in a very unhealthy state. One clearing along a stream being, I believe, affected by the extensive felling of the forest on both sides which must have had a great effect on the moisture during the dry seasons, and another clearing, which was under heavy forest shade, has been terribly damaged by thinning the shade so much so that it is being densely planted up with artificial shade in the hope it may save it. There would be nothing very serious in this as it would only point to shade being a desideratum for Liberian, but the most serious thing is the failure of young coffee planted three to four years ago, even when planted with shade.

This would, I think, point to deterioration of the seed, and I am confirmed in this by the opinion of the planter who originally planted the old coffee, who holds that Liberian does not grow as it used to. There is no doubt that looking at any lately planted coffee and comparing it with the old original trees, that it seems an impossibility for the stems to attain the same size within any reasonable time. There is another item of interest in regard to Liberian, and that is that the crop has been a complete failure last year and the year before through drought, the blossom failing to set. That long droughts are not good for it I think may be taken as proved by the success of this species in the Straits, where I believe they seldom have a month of the year without rain. There is a very important thing to be borne in mind in planting Liberian, and that is that there are distinct varieties of the coffee, one bearing much heavier than the other. So that in starting a Liberian as in a tea clearing, the importance of jat is of vital importance. From all I have seen of Liberian in Ceylon and on the continent, the successful growth of the tree seems to require—

Deterioration of Liberian.

Different Jats of Coffee.

- I. Good soil.
- II. Plenty of moisture.
- III. Shade where at all liable to drought.
- IV. Selection of the right jat.

In reference to the deterioration of the trees, it is harder to know how to meet that. Importation of fresh seed from Liberia would undoubtedly be the best way, provided any guarantee could be had that it was the right variety and carefully selected, but it is questionable I think whether it would not be better to rely on the survival of the fittest; careful selection and cultivation of the parent seed trees would I believe be as good a way as any to ensure success of future clearings and avoid repeating past mistakes. I may be wrong, but I am strongly of opinion that sufficient care has not in many cases been paid to the selection of the seed. Taking a bushel of parchment out the store for seed is hardly the way to command success. I hope some of your readers will let us know how far their experience of Liberian coffee agrees or differs from the somewhat unsatisfactory experiences I have related.

B. NELSON.

COFFEE IN BRAZIL.

THE prospectus has been issued in London of The San Paulo Coffee Estates Company, Limited, (State of San Paulo, Brazil), with a share capital of £270,000, divided into

24,000 7 per cent. Preferred Shares of £5 each = £120,000
 15,000 Deferred Shares of £10 each ... = £150,000

There is to be an issue of £16,000 5½% First Mortgage Debentures of £100 each and £120,000 in 24,000 7% Preferred Shares of £5 each. The 15,000 Deferred Shares are retained by the Condé de Sao Clemente, the present proprietor, the Vendors and their friends. The Directors will be Messrs. Henry F. Tiarks, Esq. (Messrs. J. Henry Schröder and Co.), Chairman, Quintin Hogg, Esq., Rudolph Schröder, Esq. (Messrs. Schröder Gebrüder and Co., Hamburg), and Pandia Calogeras, Esq., Paris.

It is stated that the Company has been formed to acquire certain Coffee estates in Brazil, which Messrs. Schröder Gebrüder and Co., of Hamburg (the Vendors to the Company), have agreed to acquire from the Condé de Sao Clemente, who has been in possession of the estates for many years. The estates are equipped with dwellings, machinery, &c., and on the property are over a million and-a-half coffee trees, and a railway and canal belonging to the estates. The amounts realised from the coffee sent to Santos, after deduction of the expenses from the estates to Santos, increased from £34,813 in 1894 to £55,781 in 1896, and the 1897 crop, which shows a diminution anticipated and explained, is expected to return £32,402. There are other sources of revenue arising from trading profits on commodities bought by the colonists and others in the neighbourhood, also from railway traffic on goods other than those carried for the company.

The full Prospectus estimates the future Revenue from Coffee alone at £32,402, and gives a full description of the property and returns for the past three years.

The annual amount required to provide for the Interest on the Debentures now offered is	£8,800
The amount required for the Sinking Fund is	4,000
The amount required to pay the Interest on the Preferred Shares annually is	8,400

Total amount required for the present issue £21,200
 Leaving a considerable surplus for contingencies and dividend on the Deferred Shares.

Enterprise on a scale such as this is unknown in the Coffee industry of India, and would perhaps be totally unsuited to the conditions under which that industry is carried on. We call special attention to the new Company simply because it is an indication that the Brazil Coffee trade is not to be allowed to lapse into a state of inertia. Our Teutonic brethren take a keen interest in it, and have a heavy stake in it; so the industry is likely to be "pushed," no matter what difficulties may arise or be dreaded in the way of dearer labour, impoverished soil, or increasing distance from ports of shipment.

TEA.

Dusty teas refused in America. The threatened tea-tax in America has been, curious to say, blocked for the present. Instead of using the tax as a means of shutting out low grade teas from the United States, they have adopted a sieve test, by which no tea containing more than 10 per cent. of small broken is allowed admittance. This has had the effect of already shutting out large quantities of Ceylon teas. It cannot be too frequently pointed out that broken teas of all kinds are now practically unsaleable, except in London, and even there prices rule extremely low.

Home Market.

SAYS the *P. M. Review* of 19th June:—

INDIAN TEAS.—With small supplies and a limited proportion of the useful sorts the demand continues inactive. New Teas have been offered more freely, and a fair quantity was included in the public sales consisting of growths from several districts. The Assams are about on a par with those previously imported, and of fair average quality for early arrivals, while a few of the Darjeelings are well up to the standard of former seasons, but the bulk of the offerings are inferior in cup. The Doorgas Teas show better quality than the early imports of last season, and, judging from reports,

this improvement bids fair to continue. Those from Cachar and Sylhet are, on the other hand, mostly of inferior quality. Travancore have been somewhat freely offered, and as they are, on the whole, of a useful character they met with a good demand, and sold at some prices. For the old season's imports the demand was slack, excepting for the small quantity of the better grades, which fetched former rates, the common and undesirable sorts meeting with a scanty inquiry. A considerable quantity was withdrawn, the owners' value evidently being above those of the trade. At present it is difficult to form an opinion as to what effect the earthquake in India will have in the different Tea districts in India. If the damage to the factories and railways, as given in some of the reports, is confirmed, it will doubtless considerably curtail the exports from Calcutta, and the supply of Tea here will be on a small scale for some time.

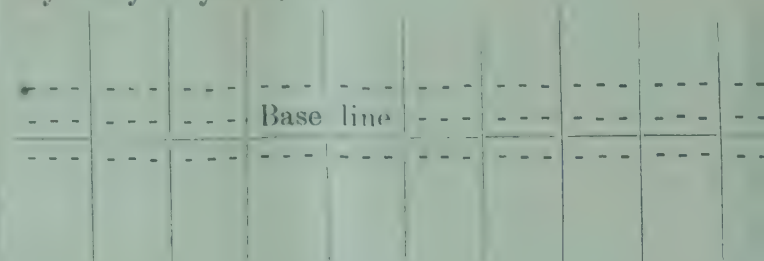
CEYLON TEAS.—Owing to the small quantity of Ceylon Tea offered during Whitsun week the sales have been exceptionally heavy, and were in consequence divided into two days, viz., Monday and Tuesday, making it much more convenient for the trade generally. Notwithstanding the large supplies, values, on the whole, were well maintained, although some slight irregularity was at times apparent. Prices for the medium and lower grades of both Whole and Broken Leaf are now extremely reasonable, and it is not at all probable that lower values will be seen this summer. On the other hand, the earthquake in India will, no doubt, for some time cause a great demand for Ceylon descriptions. The public sales comprised 10 packages, of which about 3,000 were withdrawn.

A CEYLON CLEARING.

I WENT with the Sinhalese contractor round the boundary of the new clearing, marking a tree here and there as he went. Next day he started, and in a very short time he had the whole place down. Then the trees were allowed to lie for a month till sufficiently dry, and one day we went and cut it. It was not very much, only 35 acres. It was a small burn but needed some clearing up; so he put on 20 men and cut the small branches that had not caught fire, and piled them in big heaps and then fired them again; so that two months after the felling only the big trees were left. Then my work began, and first I had to trace the roads and drains, the roads at 1 in. 17 to 1 in. 20; the drains 1 in. 12. Whilst these were being cut, I had many cutting pegs driven, lining about 3,000 are wanted per acre and a man will drive I think it's 1,000 a day. Look it up in Rutherford; he'll tell you. I put in the roads and drains first for two reasons: (i) to save wash, (ii) to save pegs.

Then comes the base line, which must be put in very carefully with compass or theodolite. A mistake of 1 in. at one end of a long line may mean yards the other end.

The main base line in, I run lines at right angles to it, say every 80 yards; so



these must be at right angles to the base line and perpendicular to one another. These are then connected by running parallel again to the base line (see dotted line). If all has been done carefully, the lines will show four corners. It costs no more and looks a lot smarter.

Next comes pitting. We usually plant 3 x 4 or 4 x 4. Personally I prefer 4 x 4 unless it's bad soil, when I like

and manure). The pits are 18 in. deep, 15 in. diameter at the top and 12 in. at the bottom. The earth should be heaped on the lower side of the hole and a cooly will do from 80—100 daily.

The pits should be left open from one to two months to sweeten. The "filling in" coolies scrape in the humus into the hole, stamp it in fairly firmly, and make a heap of humus over the hole. The holes should always be cut immediately below the pegs, unless there is a big stone or stump there; then cut above, but never to one side or the other.

The filling in should be finished a few days before the break of the monsoon, and after two or three days rain begin planting. There are four ways of planting: (i) in bamboo baskets or seedlings with a large ball of earth round the roots; (ii) plants; (iii) stumps; (iv) seed at stake germinated or not at pleasure. I like the first or fourth way best, but the second is the commonest, the third is usually used in supplying an old clearing.

In the first instance the seedlings in baskets or with merely a ball of earth round the roots are taken carefully out of the nursery and laid in flat baskets for carriage to the clearing, and in planting the earth in the hole is scraped out with a small mamoty. The small plant is put in and the earth replaced and pressed round it, taking care not to bend the tap root. These should show no check at all in their growth with good weather.

2nd.—Plants. These are ready to be put out when the collar has browned. They are brought to the field in bundles. The coolies have sticks about $1\frac{1}{2}$ in. diameter and $2\frac{1}{2}$ feet long. With this they make a hole in the centre of the pit; place the plant in carefully, taking care not to bend the tap root. If too long and stringy they should be shortened a bit. Then put the stick in at the four sides of the pit and press the earth up to the plant all round and finally press in the top earth firmly. A cooly will put out 250—300 a day.

3rd. Stumps are plants two years in the nursery and are put in much the same way as the last; larger pits are necessary as a rule, and crowbars instead of planting sticks.

4th. Seed at stake. Holing and filling as before. Plant two seeds germinated or otherwise (I prefer otherwise as a rule, unless with old coolies; new coolies break the root-lets) in each hole and shade heavily. Shade to be lessened afterwards. Seed at stake has these two great advantages:

(i) No nurseries wanted; (ii) no check to growth.

All plants want shading a bit, but seedlings and seed at stake most of all.

A good clearing should only have 5—9% vacancies at the end of the first year.

Weeding should start six weeks after the first burn and should go on monthly.

A good clearing can be lightly picked at $1\frac{1}{2}$ —2 years old. Pluck for six months, then top to 18 inches—24 inches. Pluck lightly its first year. At $4\frac{1}{2}$ years— $5\frac{1}{2}$ years it should have quite matured, but will probably increase in yield up to the tenth year, after which with *no* manure it will begin to go back; but with manure judiciously employed, should keep up its yield and may be increased further.

WANDERER.

DISTRICT ASSOCIATIONS.

CENTRAL TRAVANCORE.

A GENERAL MEETING of this Association was held at the Penshurst Bungalow on Saturday, 3rd July, at 9-30 A.M. The Chairman, Mr. F. M. Parker, who has lately been indisposed, was fortunately so far recovered as to be able to preside, but owing to the press of work on Estates there were but few members present, a most unusual circumstance. The whole of the business on the Agenda paper had, however, been thoroughly discussed in Committee a day or two prior to the Meeting.

S. I. P. E. C. Report.—The conclusions at which the Committee had arrived were endorsed by the Meeting.

Resolved: That the Delegate to Bangalore be instructed accordingly.

U. P. A. Leaf Disease Expert.—Read circulars and correspondence.

Resolved: That no useful purpose will be served by employing an expert, a thorough investigation having taken place some years since in Ceylon.

U. P. A. "Planting Opinion."—Read circular from Chairman.

Resolved: That the paper deserved every possible support, Mr. Parker going so far as to say that, should it be necessary, he saw no objection to giving the Periodical a small subsidy from the U. P. A. Funds.

U. P. A. Proxies.—Read circular from Secretary.

Resolved: That open proxies are undesirable, but that the length of time fixed for sending them in to the Secretary prior to a General Meeting was unnecessarily long.

U. P. A. Individual Membership.—Read circular from Secretary.

Resolved: That this Association is entirely opposed to Individual Membership as embodied in Mr. Parsons' scheme, and that the representative to Bangalore be instructed to vote against it.

U. P. A. Famine Fund.—The Honorary Secretary stated that he had received and forwarded to the Secretary, U.P.A., Rs.545 on account of this Fund: also that he had forwarded on account of the

Reserve Fund Rs.1,365 to the same quarter: further that, considering the small number comprising the Association, the many calls on them, and their loyalty in supporting the Indian American Tea Fund, the amounts raised were most gratifying, and reflected great credit on the *esprit de corps* of the members.

Delegate to the U. P. A. General Meeting.—Mr. G. L. Acworth was unanimously elected to represent the Association.

U. P. A. Finances.—Mr. Acworth said:—

MR. CHAIRMAN AND GENTLEMEN,—You are all aware that the method of raising funds for the U. P. A. still occupies our attention, and I have given notice that in August next I will bring forward pro-

posals which will, I trust, meet the views of almost all. These proposals I have already laid before your Chairman and Committee, and I am glad to inform you that they have received the unqualified approval of these gentlemen: further, that more than one District Association has signified its intention of adopting them. They are:—

(1) That the present method of subscribing and voting be altogether abolished.

(2) That an annual tax of one anna per acre be levied on each Association.

(3) That a vote shall be held for every Rs.10 so raised.

(4) That the rule relating to proxies shall hold good.

Gentlemen, you are aware that Mr. Parsons has energetically pressed his scheme for the introduction of the Individual Vote, but for various reasons into which it is not necessary to enter, that scheme has been rejected by more than one District Association, particularly by those at a considerable distance from the place of meeting. Now what I claim for these proposals of mine is that it lies within the power of every Association to please itself as to whether it has an individual vote or not. Take our own Association as an example. Say we subscribe on 6,000 acres, we shall pay Rs.370 per annum, entitling us to 37 votes. If five or six members wish to proceed to the General Meeting at Bangalore, you can distribute these votes amongst them, and you can, if you wish it, say, "Vote as you like: we do not care." Personally I should object to any Association giving its delegates such power, though I think a certain amount of latitude should be allowed them, otherwise discussion is fruitless. But I think the line an Association wishes its delegates to adopt should be indicated. If, however, you wish to give your delegates full power to use the votes as they like, you introduce, so far as your own Association is concerned, the individual vote, and I cannot see how the U. P. A. can object to it, for it in no way affects your power as an Association, whilst other Associations are at liberty to do exactly as they please, and bind down their delegates to order as tightly as they can. From what I have said I think you will agree with me that with the adoption of this scheme, it becomes unnecessary for Mr. Parsons to press his measure for the individual vote, for his members can buy as many as they please up to the value of their acreage. An objection to my proposals has been that it gives large Associations too much power. Of this I am not afraid. Our interests are practically identical, whatever product we may be cultivating. At present it is true that coffee largely preponderates on the U. P. A. list, but year by year tea will come more to the front and in course of time will equal, if it does not actually exceed, coffee. Moreover I think we have too much sense to quarrel on such a point. We ourselves are a small Association and one of those most interested in this question, and if we are not afraid of having obnoxious resolutions thrust down our throats, others may, I think, rest equally satisfied. As regards the financial part of my proposals, I may say that our income should not be less than between Rs.9 and 10,000 a year, which would suffice to meet our expenses and at the same time enable us to lay by something annually to the Reserve Fund. Should these proposals of mine be accepted, any previous promises of contributions to the Reserve Fund over and above what has been already paid are of course annulled, and that Fund will be entirely built up out of such surplus income as we may year by year have it in our power to lay aside. Personally, I should like to see the Reserve Fund built up and assume considerable proportions more rapidly, but there is very great opposition to such a scheme, and the one I have now put before you will, I think, meet the views of almost all. Gentlemen, I will not weary you with more details, but will now put these resolutions formally to the meeting, and shall be very glad if you will endorse what your Committee has already approved.

The resolutions, having been put, were unanimously adopted.

Local Labour Contracts.—Read letter from Mr. Buxton Laurie. Recorded.

Condition of Roads and Bridges.—Read letters from Chief Engineer in Travancore and from Executive Engineer, Northern Division. Recorded.

Crimping Coolies.—More than one member having pointed out that the D. P. W. subordinate officers have begun to forcibly detain coolies proceeding to the Estates, it was unanimously resolved:—

That the Honorary Secretary be requested to draw attention of the Chief Engineer to the fact that several gangs of coolies under advance to work on various Estates in these hills, whilst proceeding to their destination, have been and are still being forcibly detained along the line of road between Kottayam and Koomlie by certain subordinate officers of the D. P. W., thereby inflicting serious losses on the planting community.

Title Deeds for lands bought at auction in 1896. The Honorary Secretary informed the meeting that the Dewan had again assured him that maps and deeds were being prepared, and would shortly be issued.

Medical Fund.—Mr. A. E. Veale, the Honorary Secretary to the Fund, informed the meeting that hitherto no satisfactory reply had been received from H. H. Government to the applications for aid to the various dispensaries. Should no support be received from Government, the Fund must of necessity break down, as it was impossible for the Association to bear so heavy an assessment. Some of the dispensaries had now been running for over a year, for over six months, whilst for over six months Dr. J. J. had been ably supervising the medical establishments, visiting the dispensaries with regularity and so on. The health of the District had much improved this season, probably a good deal owing to the effective arrangements made, and it was earnestly hoped that these would not fall through for want of Government aid.

A vote of thanks to the Chairman and Honorary Secretary terminated the Meeting.

GRANVILLE L. ACWORTH

Honorary Secretary

LOWER PULNEYS.

PROCEEDINGS of the Half-Yearly General Meeting held at the Dindigul Club on Monday, the 15th March 1897. Present: Messrs. L. J. Creed (*Chairman*), W. H. Gerrard, F. R. G. H. Ludwig, E. Morgan, H. Rowland Newport, Howard N. (*Honorary Secretary*), Gentha Coopasawmy Chetty Avergal (*proxy*) Messrs. E. deFondclair and H. E. Somerville. (Voted) Messrs. G. Mengel and C. P. N. Martin.

Minutes of last meeting taken as read.

Read Notice calling meeting.

Read letter dated 12th October 1896, from Mr. Morgan, for Mr. Palni Andi Pillay, of the Sirumallais, saying that he had his name retained on the books of the Association as a member, but he was unable to attend last meeting, and would forward his subscription later. Recorded.

Read letter from Mr. U. E. Doyle, dated 8th February 1897, regretting that as he was leaving the district he had to resign his membership of the Association, and wishing the Association success.—Recorded.

The first item on the Agenda paper being the U. P. A. Fund—

The Chairman called upon Mr. Fred. Gerrard, who proposed the adjournment of the discussion at the last General Meeting, to read the Proceedings.

Mr. F. R. Gerrard said:—In spite of all that had been said in the long discussions we have had on the matter, we come back to Mr. Acworth's scheme; it was easy to criticise and find faults with which it did not suit us, but no more solid scheme had, in the meantime, been evolved. We might meet Mr. Acworth's scheme if we double our subscription in the District Association, giving the amount thus obtained to the Trust Fund, but this would mean a loss of members which we could not afford. Failing Mr. Acworth's scheme in its entirety, the only alternative application was for him to be Individual Membership, and to this there was no objection.

The Trust Fund, he thought, should be supported entirely

proprietors, but if the subscription, in the case of Individual Membership being thrown open, was not put at too high a figure, many superintendents would join.

With regard to proxies—should Individual Membership be admitted,—he thought they should be allowed at General Meetings, but the vote only be given through the District Association representative.

Mr. Creed said:—Individual votes should not be allowed by proxy unless the holder was at the same time given full discretionary powers, and Association proxies should be allowed as at present.

Mr. Newport said:—If Individual Membership was allowed, he thought there would not be so great a difficulty as there seemed to be at present in getting representatives for the District Associations, and therefore, if it could possibly be done, District Association proxies should be disallowed. There was no doubt that proxies in any form at a representative meeting, as the U. P. A. would be in any case, were bad, and worst of all were the proxies that bound the holder to vote against his convictions. If proxies were not allowed to Individual Members, or what came to almost the same thing, their proxies had to be given away with full discretionary powers, Individuals might look upon it as paying for another's pleasure, and not join unless they were more or less sure of being able to attend the Bangalore meetings as the Mysore and Coorg men would be. He hoped that it would not prove so in fact, but thought it was a point that would have to be taken into consideration. Therefore he thought that proxies in both cases would have to be allowed; if any could be done away with, it ought to be the Association Proxies.

Mr. Mengel said:—He thought that if Individual Membership was granted, District Association Votes as well as Subscriptions should be done away with, otherwise the voting would clash.

The Honorary Secretary said:—He was also of opinion last year that, if Individual Membership were thrown open, District Association Votes should be abolished, but now he thought the U. P. A. could not afford it. At present the U. P. A. was absorbing the funds derived from the District Association Subscriptions for current expenses, that if another source of income was opened up to it—one of the funds, it didn't much matter which—but the income from the Individual Members by choice, should be kept religiously untouched year by year and added to the Trust Fund until such time as the U. P. A. could afford to do away with the one and live upon the interest of the other. To attain this end the quicker he would reiterate what he has said before and suggest the asking for ten years' subscription at once. He felt sure many Proprietors, and Superintendents too, would prefer to give a cheque for, say, Rs. 250, than be bothered with the subscription book every little while. The benefit to the Trust Fund is easily seen. With regard to the voting, he saw no reason why it should clash if proxies were allowed. A majority in the District Association would only strengthen its majority in the U. P. A. Meeting. It was very improbable that the minority in the District Association Meeting would hold more Individual votes than the majority; if it did happen so, it was easily remedied by the District majority taking more Individual votes!

He agreed with Mr. Gerrard, however, that Individual Members' proxies should only be brought up to the meeting by the District Association representatives, so that Individuals should not be able to collect a number of proxies merely to create an opposition.

He did not think either that there would be so many members present at a meeting as to obstruct business. The balance of power should still be with the delegates, and if the Individual Members were allowed to speak at all, they might be limited to, say, five minutes.

Resolved that the Honorary Secretary be asked to write again to the Secretary, U. P. A., asking whether any definite figure could be given, before next U. P. A. Meeting, as the probable maximum value of the Individual votes, so that we could go up to the meeting prepared to say how many of our members will join at once.

Read Circular, dated 14th February 1897, *re* Individual Membership and votes.

Read letter from Secretary, U. P. A., dated 20th November 1896, acknowledging receipt of L. P. P. A. Subscription List and Cheque for Trust Fund. *Recorded.*

Read letters from various members, expressing their readiness to, or refusing to join the U. P. A. as Individual Members, or asking for further particulars *re* same. *Recorded.*

2. *The U. P. A. Subscription.*

Read Secretary, U. P. A.'s letter, dated 13th November 1896.

Read Proceedings, Central Travancore P. A. Annual General Meeting.

Resolved that the extra 50% call paid on the U. P. A. Subscription for 1895-96 be considered as a donation for that year and the full subscription for one vote be paid for 1896-97.

3. *The Famine Fund.*

Read Circulars dated 24th Jan. and 12th Feb. 1897, and U. P. A. Chairman's circular.

Subscription papers were circulated for members who had not already sent subscriptions direct and desired to do so now through the Honorary Secretary.

4. *Iyempolliem-Manalore Transport Rates.*

Read letter, dated 9th February 1897, from Mr. E. deFondclair.

Mr. Fred. Gerrard, speaking on behalf of Mr. deFondclair whose proxy he held, said:—Mr. deFondclair's transport rates were 2 as. 8 p. from Iyempolliem to his Estate at Manalore for 50 lbs. and said he could get no transport coolies while Manalore Estate paid 4 as.

Mr. Creed said:—That 4 as. was paid for 65 lbs. and that the distance was greater. The rate 4 as. was general in the Kodavannaar Valley before he came into the District.

The meeting was of opinion that, taking the extra distance into account, this might be allowed, since the difference was only about 6 p.

5. *The Ahtoor-Kodaikanal Ghât Road.*

Read letter from Secretary, U. P. A., dated 3rd Nov. 1896, saying that he could only send a general recommendation before Government with regard to Roads and Communications in Planting Districts, and could not make mention of special cases.

The Honorary Secretary read part of two letters from Mr. Granville Acworth bearing on this subject, and said that so far we had only passed general resolutions with regard to Roads and Communications at the U. P. A. That these had done no good in our case. That he had heard it rumoured that we were quite wrong in our idea that a grant had been sanctioned for the construction of a bridle path. That the papers relating to this matter were pigeon-holed was only too probable! We were really worse off, if that were possible, than we had been. The time was come to bring forward a definite resolution at the U. P. A. asking for the early construction of, at any rate, the lower part of our ghât, *i.e.*, from Ahtoor to Thandi-gudi, and if Government didn't see its way to making the cart road now the construction of a bridle path, he felt confident that our prayer would be supported at the U. P. A.

He much regretted that an idea seems to have got about among the Government officials of this District that in matters where the Association moves, it has only in view the convenience of the comparatively small European Community, especially did it seem so with such of the Heads of Departments as have not been near, and certainly not on to, the Lower Pulney Hills. The Native Landholders on these Hills would not move of themselves, and when the Association moved it was, apparently, misjudged; if it was petitions signed by Natives that the Government officials wanted, we could send them many and largely signed ones too. He had been endeavouring to obtain some statistics from the Tahsildars of the various Taluqs:—

Read letter No. 793, dated 1st Dec. 1896, from the Tahsildar of Dindigul, and No. 444, dated 11th December 1896, from the Tahsildar of Kodaikanal, saying that they could not supply the information required except with the permission of the higher authorities.

Read Honorary Secretary's letter to the Collector, dated 5th December 1896, and reply No. 1660, dated 16th December 1896, authorizing Tahsildars to give the desired information.

The Honorary Secretary said that he had already obtained some of the statistics needed, but not all. That when we go up to the U. P. A. Meeting this year, we must have all such statistics at our fingers' ends. He asked that a Sub-Committee might be appointed to assist him in the compilation of these statistics and in the drafting of a resolution to be put before the Association at the next meeting.

Resolved that the Secretary is authorised to ask any other two members of the Association to form a Sub-Committee with him to collect statistics and draw up a resolution on the subject to be set before the next General Meeting of the Association.

6. *Sirumalai Coffee Theft Cases.*

Read letters from Mr. Morgan, Sirumalais, dated 19th October 1896; 1st November 1896; 16th November 1896; 25th November 1896; 21st February 1897, and Mr. G. S. Hickey, Pleader, dated 23rd January 1897.

Read through Judgments given in two cases of Coffee Theft from the Sirumalais, in which the thieves, though caught red-handed

had been acquitted by the Stationary Magistrate of Dindigul for apparently absurdly inadequate reasons.

Since a re-trial has been applied for, and granted by the Acting Joint Magistrate, the cases were still *Sub judice*, and were therefore not discussed.

Resolved that the re-trial of these cases be watched with interest by this Association, and the papers obtained for discussion at a future meeting.

7. Import Duty on Tea Seed.

Read Circular, dated 28th September, 1896.

And " " 14th January 1897. *Recorded.*

8. The District Board.

Read Honorary Secretary's letter to the Collector and President of the District Board, asking that the Planters might be represented on the Board, dated 12th November 1896.

Read reply of the President of the District Board, No. 1421, dated 24th November 1896, saying that there will be no vacancy on the Board until June 1897.

Read copy of Kanan Devan P. A. Honorary Secretary's letter to the President, District Board, dated 26th November 1896.

Read Kanan Devan P. A. Honorary Secretary's letters, dated 3rd and 5th December 1896. *Recorded.*

9. The Dindigul-Pothanur Railway.

Read Honorary Secretary's letter to the Hon'ble Mr. Hodgson, dated 12th November 1896, and his reply dated 17th November 1896. Kanan Devan P. A. Honorary Secretary's letters dated 26th and 27th November 1896. Honorary Secretary's letters to the Hon'ble Mr. H. P. Hodgson, dated 22nd November 1896 and 5th December 1896, and Mr. Hodgson's reply, dated 12th December 1896, also Honorary Secretary's letter to the Honorary Secretary, Kanan Devan P. A., dated 5th December 1896. *Recorded.*

Resolved that the Honorary Secretary be asked to write again to the Hon'ble Mr. H. P. Hodgson asking whether he has been able to obtain any information from Government yet as to their views on their subject of the construction of this Railway, as to whether he thinks the construction is likely to be taken in hand shortly, and his opinion as to the advisability of bringing the matter up again at the next U. P. A. Meeting.

10. Act XIII. of 1859.

Read Circular of the Hon'ble H. P. Hodgson, dated Jan. 1896, and "Counsel's opinion," dated 24th Feb. 1897. *Recorded.*

11. Government appointment of a Fever Specialist.

Read U. P. A. Secretary's letter, dated 26th Oct. 1896. Letter from Mr. E. deFondclair, dated 11th Nov. 1896, and Circular dated 21st Dec. 1896. *Recorded.*

12. Cinchona bark.

Read Circular dated 29th Jan. 1897. *Recorded with satisfaction.*

13. Lady-birds and Green-bug.

Read Honorary Secretary's letter to the Hon'ble H. P. Hodgson, dated 28th Nov. 1896. Letters from Mr. Hodgson, dated 24th Nov. 1896 and 11th Nov. 1896. Also Circular dated 23rd Nov. 1896. *Recorded with satisfaction.*

The Secretary was asked to mention this subject in his letter to the Hon'ble Mr. Hodgson and enquire if he has heard whether Government have had any reply from Hawaii, and whether any further steps were being taken in the matter.

14. The Virupatchy Post Office.

Mr. W. H. Gerrard in opening this subject said:—The Post Office at Virupatchy was the nearest, indeed the only Post Office, within reach of the Planters on the North side of the Lower Pulneys; he need hardly say what an inconvenience it was to have a Postmaster there that did not either read, write, or speak English.

The irregularities that take place were inconceivable; for instance, he had posted some Currency Notes in a Registered cover on the 30th January, the Postmaster's receipt for which was only received on the 4th of February and the Registered letter arrived at Madras on the 5th of February. The letter had been registered at Dindigul instead of at Virupatchy, apparently because the Postmaster had no one there to translate the English address to him!

Again, on two occasions Railway Receipts sent per V. P. P. were delayed at Virupatchy for three days, and he had to pay demurrage to the S. I. Railway on the goods, because the Postmaster could not read English.

This Post Office was the centre for several European Estates, some of these had only Native writers in charge and therefore were not inconvenienced as their correspondence was chiefly in Tamil, but the letters for the three Estates managed by resident Europeans using that Post Office were sent up to the Hills in one tappal bag, that of Peryoor, as the Postmaster could not sort them. Other letters

addressed to neither of the Planters were not infrequently also up in this tappal bag merely because they were addressed in English and the Postmaster could not read the addresses. No Planter has his own tappal bag, but had to trespass on the kindness of Mr. Fred. Gerrard to have his letters sorted out and sent him the next day!

That a Planter could not even own his tappal bag was a hard thing to think of, he thought, that ought not to be allowed.

He could state that for the Planters alone Currency Notes (Registered covers), Money Orders and Value Payable articles to the value of 20 to 25,000 Rs. a year passed through the hands of the Virupatchy Postmaster.

He proposed that the Honorary Secretary be requested to write to the Superintendent of Post offices, Trichinopoly Division, asking to appoint a Postmaster to Virupatchy that understands English.

Mr. Fred. Gerrard in supporting this resolution said that he had posted a registered letter on the 11th March, and that no receipt had been received from the Postmaster yet, as apparently there was no one at Virupatchy to translate the address to him.

Mr. W. H. Gerrard's proposition being put to the meeting was carried.

15. Address to the Queen-Empress.

Read Circular, dated 23rd February 1897, and 27th February 1897; also letter from Mr. Granville Acworth suggesting alterations in the draft, dated 14th March 1897. *Recorded.*

Proposed by Mr. Creed and seconded by Mr. W. H. Gerrard that:—This Association thinks that as it was considered wrong to subscribe Trust Fund monies to the Famine Fund, the expenses of this address and casket should not be taken from it either, but should be raised by special subscription. *Carried.*

Read Circular dated 23rd February 1897 re Mr. Sander's letter to the Secretary, U. P. A., on Coffee adulteration and Chamber of Commerce. *Recorded.*

New Members.—Mr. J. L. Creed said that Mr. Mengel, who was then present as a visitor, had taken up the Dindigul Agency, and some of the Planters, and took great interest in Planters and planting matters generally. We had precedent in Planting Associations being on Planters' Associations, therefore he proposed that Mr. Mengel be admitted a member of this Association. Seconded by Mr. Howard Newport. *Carried.*

With a vote of thanks to the chair the meeting then closed.

LOUIS J. CREED, *Chairman.*

HOWARD NEWPORT, *Honorary Secretary.*

MARKET SUPPLEMENT.

Owing to the Jubilee Holidays in London no markets were held, hence the brevity of our "Market Supplement" this week.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (June 25, 1897) says:—No Public Sales have been held this week owing to the celebration of the Diamond Jubilee; but they will be resumed on Tuesday next, 29th June. Business, from the above cause, has also been very quiet, and prices in East India and Central American show little or no change since our last report. Receipts at the Brazilian ports have again increased owing to the early start of the new crop coffees and the Terme market in consequence has been weak, quotations showing a decline of 2/- on the week.

TEA.

LONDON advices dated 25th June 1897 state:—To-day's quotations for good common Congou are as follows: June, 1897, 4 9-16d, 4 8-16d, August 4 8-16d, September 4 8-16d, October 4 7-16d.

To-day's quotations for fair whole-leaf Indian are as follows: 1897, 7 7-16d, July 7 8-16d, August 7 7-16d, September 7 7-16d, October 7 4-16d.

To-day's quotations for Ceylon are as follows: June, 1897, 5 8-16d.

Tea Duty Paid, June 21 288,995 lb.

Exports ditto 31,560 „

Imported in the Carthage, from Bombay, 278 packages; Manora, Calcutta, 329 cases; from Madras, 33 cases; from Ceylon, 9183 cases; half-cases, 101 boxes, 132 packages; Clan Mackay, from Ceylon, 198 packages; from Cochin, 198 packages.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, JULY 24, 1897.

[No. 17.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; and Quarterly, Five Rupees, including postage.

ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

MANAGER'S NOTICE.

Back Numbers: A few odd Back Numbers offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 30th July 1897.

Nilgiris.

NELLAKOTA, 13th July.—A second burst of the S. W. commenced on the 4th and continued up to the 11th. Yesterday and to-day have been cloudy with little or no rain. Planting and supplying in full progress; handling commenced on several places; coffee on the whole looking well with lots of fine wood for next year's crop if only Hemeleia Vastatrix will not lay its trail over it all. *Health*—Fair. *Labour*—Insufficient. Grain last week: rice 7 to 7½ seers per rupee; ragi 18-20.

Coorg.

POLLIBETTA, 20th July.—*Weather*.—Last heavy rain on 12th, amounting to over 1 inch in parts; 11 inches on 13th; 70 inches on 14th; no rain on 15th; 10 inches on 16th; 17th, no rain. On Sunday fresh light burst set in, and since weather has been gloomy more or less and light showers occur daily. Sunday, 20; Monday, 25 inch. Ideal weather for planting which is going on. *Plant-diseases*.—Specks of leaf-disease to be seen on leaves of individual trees if looked for; but coffee on the whole still looking fine. Parts will probably go sick about August-September. It will be better so, as trees will recover by crop time and be in good heart again at blossom time. Last season leaf-disease was postponed till late, and trees were too shuck to blossom when early rain came in February. *Labour*.—With few exceptions, sufficient for requirements. *Public Health*.—Some fever and bowel complaints prevalent, but on the whole as fair as can be expected.

Nellampathy, British.

21st July.—*Weather*.—Very pleasant and at the same time suitable for planting as a little rain comes daily. Rain for week 1.51; to date 55.70. *Crops*.—In a few places where handling has been done a fair crop is showing, but in the majority of cases the handling has only shown up the nakedness of the trees as far as the berry is concerned. *Plant-diseases*.—Leaf-disease, I am sorry to see, is very bad in some places, and all over some is seen, be it little or much. *General Health*.—Fair. Coughs, colds and fever are prevalent. Cholera has not entirely gone yet, and it has got in among Mulseras and Tamils, I believe. *Labour*.—In most cases more than sufficient for requirements this year, as the cry all over is "cut down expenses," and only the most necessary works are to be done. *Interesting Items*.—Well, rather! What do you think of a wedding? One of the Proprietors is taking to himself a wife and we are only recovering the shock now! That's nothing, however, compared to the absolute knock down blow we received when we found the Cochin people had discovered they had a lot of planters in their State who were continually

complaining of roads and bridges, and on awakening to the existence of this long-hidden and Secret Society they have actually—I hope no one has weak nerves!—pulled down TWO bridges which it seemed they kept as temptations to suicide for any wandering horseman (or perhaps they were meant as sambur pitfalls) and, just fancy, are rebuilding them. No, I don't mean putting a sound plank over the rotten one through which a pony has fallen, but really and truly making new bridges. *Tableaux Vivant!* *There's a picture for you!*

GENERAL NOTES AND ARTICLES.

Kola nuts.

We note in the *Produce World* that exports of this article from the West Coast of Africa promise to develop considerably. There is a good market at present in London from 8d. to 1s. 4d. per pound. The nut, by the way, should be cut in halves when raw, and then dried before export.

Lady-birds and bug.

In noticing that Mr. Koebele's services would be unavailable to the Madras Government for the purpose of introducing beneficial bug parasites, our contemporary, the *Ceylon Observer*, suggests that Mr. E. Ernest Green, Honorary Entomologist to the Government of Ceylon, be approached on the subject. If a suitable man cannot be found among our scanty scientific staff in India, the suggestion would seem an excellent one. Mr. Green, it should be noted, is now engaged in investigating a mysterious disease that is committing great havoc on the Island cacao plantations.

Misuse of Famine Funds.

In continuation of his "Plain Tale from the Hills," Mr. B. Nelson writes: "With a view of making my case more complete, I make the specific allegation that the coolies' (absconding from Travancore) rail fare was paid out of the Madura Famine Fund locally raised. Such a statement, if unfounded, can easily be refuted, but I have little doubt that I can challenge contradiction and defy denial." We note that Mr. Nelson has also written to the *Times of Ceylon*, which quoted his first letter to us, about the matter, warning them against attempting to import "famine coolies."

Bat guano.

We understand that considerable quantities of this valuable manure are available in Burma, and indeed form an article of commerce at its chief ports. We note that the deposits of bat guano in New Caledonia are being turned to commercial account, considerable shipments having been made to London. Curious to say, London traders have given it but scant encouragement, though the guano was of good quality. The Editor of the *Produce World* states that a fair average quality containing 5 per cent. ammonia and 16 per cent. phosphates should be saleable in London at £5 to £5-5s. per ton. Of course it would never pay planters to purchase at that rate, as our poonacs and fish manures are decidedly richer and cheaper.

Statistics of rainfall.

We are indebted to Mr. Digby T. Brett for a suggestion which, if we are enabled to carry it out in its entirety, will doubtless

prove of more than ordinary interest and value to the community. It is no less a task than collecting and publishing statistics of the monthly and annual rainfall of each of the different planting districts of South India for the past two years, more or less. We publish Mr. Brett's letter in our correspondence columns, and trust that our readers kindly send similar tables from their own districts. A correspondent points out, the information thus gained supply authoritative answers to the numerous queries regarding the chances of successfully introducing products. More especially, we may add, if statistical notes on temperature and elevation are added.

The Madras Almanac.

We have to acknowledge, thanks, the receipt of a copy of the *Madras Directory* for 1897, published by Messrs. V. Co., the well-known Printers and Publishers on the Madras Road. The book contains a large amount of valuable information respecting the various Institutions and Societies of Madras and the Presidency, Madras City, Mofussil, Government and Municipal Officers, Tea, Coffee and Cinnamon Estates, Gold Mines, &c., with a Commercial and Trade Directory, and List of Residents in Madras, &c. &c. It also contains two photos well executed of H. R. H. the Duke of York, and the Rajah of Ramnad, and it will be useful to business men as a book of reference when needed. The price of the publication, with paper cover, is only one rupee.

Ceylon labour.

At the annual meeting of the Ceylon Association in London on the 14th June, one of the most important questions discussed was that concerning coolies and the keeping down of advances. At present it is an acknowledged fact that certain estates give as much Rs. 100 advance per coolie, an amount which under no possible circumstances can be paid off by him. If it can't be paid off, it must be written in the books, instead of being placed among the assets. The cost of production must thereby be increased. Mr. K. Rutherford suggested that in a matter of this kind it was of no possible use addressing Government. The remedy lay with themselves, in combination to keep advances as low as possible. Very much the same thing has been tried in India, but has lamentably failed. We are curious to see how the experiment succeeds in "U. P. A. S. I. Ceylon."

U. P. A. S. I. LEAVES.

GATHERED BY THE SECRETARY, U. P. A. S. I.

THERE is very little in the way of 'pickings' this week.

Statistics come in very slowly. Perhaps planters do not realise how necessary *grains* are to the formation of a complete set. If complete statistics could but be put together, the importance and strength of the planting industry in Southern India would stand proved. At present, the men who would cast a doubt upon it.

The Editor of this paper is willing to publish, as far as possible, the full proceedings of the various District Planting Associations. To enable him to do this with any conscience, he wants copies forwarded sharp, and not many meetings of any particular Association reported.

ce! When reports of meetings extending over two to three months are all forwarded in a bunch, too great pressure is put on the space available, and an unpleasing monotony" of matter is presented. Honorary Secretaries are requested to send in either MS. or printed copies as early as possible.

It would also be well if the U. P. A. S. I. were enabled to have complete records of the proceedings of each of the District Associations. At present its receipts are of a fitful and spasmodic character.

INDIAN-AMERICAN TEA FUND.

TO THE EDITOR,

Planting Opinion.

DEAR SIR,—Will you kindly publish in your paper the following list of donations to the Indian Tea Association from estates in this District to the Indian American Tea Fund?

I am happy to inform you that every estate has contributed to the Fund.

LIST OF DONATIONS.

	RS.	A.	P.
Arnakal	86	0	0
Shley	15	0	0
Ararady Goody	62	13	6
Airfield	68	7	0
Opococlam	100	0	0
Enshurst	103	0	0
South India Tea Estates Co., Ltd.	359	10	6
Tagbrook	161	5	0
Travancore Tea Estates Co., Ltd.	652	8	0
Wallardie	93	13	3
E. Veale (private donation)	20	0	0

Total Rs. 1,722 9 3

GRANVILLE L. ACWORTH,

PÉERMAAD, 19th July 1897.

Honorary Secretary.

THE ANAIMALAIS.

THE following are the rules and conditions on which land on these hills may be leased, as published in the *Nilgiri District Gazette* of 16th instant:—

Notice is hereby given that about 80 square miles of land on the Anaimalai hills in Coimbatore District are available for application for planting purposes under the subjoined rules. A map of the locality may be seen in the office of the District Forest Officer, South Coimbatore. Appendix.—Rules for the leasing out of lands on that portion of the Anaimalai forest reserve in the Coimbatore district which lies on the slopes draining towards Travancore and Cochin:—1. Applications for land in this reserve shall be addressed to the Collector of the district and shall be accompanied by a tracing of the topographical map of the Survey of India on which shall be marked the block of land applied for. The applications shall contain the following particulars:—(a) The estimated area of the land applied for. (b) The situation of the land and its boundaries as accurately as can be stated. 2. No lot shall exceed 1,000 acres and no lot shall be less than 160 acres, unless otherwise specially ordered by Government. 3. Every lot shall be compact and shall include no more than one block of land capable of being surrounded by a ring fence. A block of land will be regarded as fulfilling this condition although a public road may pass through it. 4. On receipt of an application under rule 1. the Collector shall require the applicant to deposit 10 per cent. of the upset price, which deposit will be refunded in case the lease of the land be not bought in by the applicant, and shall thereupon advertise the lease of the land for sale at the Collector's office at a specified hour and on a specified date which shall not be less than three months after the deposit of

such sum. 5. A notification of the intended sale of the land specifying the locality, the boundaries, the approximate extent and annual assessment of the land, and the place, time and conditions of sale shall be posted for three clear months in the offices of the Collector and of the Tahsildar of the taluk. An advertisement of the intended sale shall also be inserted in the *District Gazette* and published in one or more of the principal papers of Madras, Calcutta, Ceylon and Singapore. If the sale be not completed on the date fixed in the notification, the Collector, subject to the provisions of rule VIII., may postpone the sale for a period not greater than seven days to a date to be specified by him and to be intimated to all the parties that may be present and to be posted up in his office. 6. The Collector shall send to the applicant by registered letter written notice of the place and time of sale; but no sale shall be postponed in consequence of the non-receipt of such notice or delayed in consequence of the non-appearance of the applicant. 7. If the applicant withdraws his application prior to the date of sale, it shall be discretionary with the Collector to proceed with the sale or not as he considers best for the public interests. In such case, the applicant will be entitled to the refund of so much only of his deposit under rule IV. as may not have been expended in publishing the advertisements and notifications under rule V. 8. The lease of the land shall be brought to sale on the day appointed, provided—(a) that the application has not been withdrawn, or that if withdrawn, the Collector has decided under rule VII. to proceed with the sale, and (b) that no claim of private proprietorship or exclusive occupancy or of any other right incompatible with the lease of the land under these rules has been preferred and admitted by the Collector as sufficient ground for the postponement of the sale. At the appointed time the approximate area of the land as plotted on the map shall be announced and the lease of the land for a period of 30 years shall be put up for sale at an upset price of Rs.5 per acre and sold to the highest bidder above the upset price, subject to the following annual assessment payable on or before the first March of every year:—(i) During the first five years of the lease, eight annas per acre per annum on the whole holding. (ii) From and after the beginning of the sixth year of the lease, two rupees per acre per annum on so much of the holding as shall have been cultivated and eight annas per acre per annum on the remainder, provided that in no year after the first five years shall the assessment be less than the following:—

In the 6th year Rs.2 per acre per annum on $\frac{1}{30}$ of the holding and 8 annas per acre per annum on the balance.

" 7th "	" "	" "	on $\frac{1}{10}$	" "
" 8th "	" "	" "	on $\frac{2}{10}$	" "
" 9th "	" "	" "	on $\frac{3}{10}$	" "
" 10th "	" "	" "	on $\frac{4}{10}$	" "
" 11th "	" "	" "	on $\frac{5}{10}$	" "
" 12th "	" "	" "	on $\frac{6}{10}$	" "
" 13th "	" "	" "	on $\frac{7}{10}$	" "
" 14th "	" "	" "	on $\frac{8}{10}$	" "

In and after the 15th year Rs.2 per acre per annum on $\frac{1}{2}$ of the holding and 8 annas per acre per annum on the balance.

(iii) No assessment shall be leviable on public roads accepted as such by the Collector. For the purposes of calculating the assessment leviable in any year the Collector shall be the sole judge whether the land is or is not "cultivated." Every lease granted under these rules shall run from the date of its execution; but the assessment payable thereunder shall be leviable in respect of the official year and shall fall due on the 1st March in each year of the lease. 9. Every bidder shall deposit 10 per cent. of the upset price before bidding and the successful bidder shall pay the remainder of the purchase money plus all expenses under rule V. within thirty days on pain of forfeiture of his deposit. 10. Arrears of annual assessment shall be recoverable as provided under section 66 of the Madras Forest Act V. of 1882 in the same manner as arrears of ryotwari land revenue are or may be recoverable by the law for the time being in force in the Madras Presidency. 11. Lands, the lease of which has been sold under these rules, shall continue subject to all taxes payable by law. 12. The existing and customary right of Government, of other proprietors and of the public in existing roads and paths and in streams running through or bounding lands leased under these rules are reserved and in no way affected by such leasing. 13. The Collector can reject any application if for special reasons he considers it inexpedient to give the land applied for on lease. 14. An application not withdrawn amounts to a bid for the land at the upset price of Rs.5 an acre.

LETTERS TO THE EDITOR.

ANSWERS TO CORRESPONDENTS.

["Camp Takrepatam."—Many thanks for yours of 14th with its interesting notes, which we publish elsewhere. Please excuse direct reply, as with our weekly edition, our time is more limited than ever. We shall be very glad to hear again from you. "A. C. G." Nellampathies.—Write to the *Ceylon Observer* Press for the work you mention. "Q."—We don't quite see the force of your argument: in the absence of regular accountants, what can estate managers do, but keep the accounts themselves, or do you suggest that assistants or writers are more capable of carrying out this work? "Orange Pekoe."—Your "Advice to tea-planters" is doubtless well meant, and we thank you for the intention displayed in sending it. Fine plucking is very desirable, but it can easily be pushed too far. Kindness to tea-makers should certainly be studied. Your system of forking the land every five years only seems a little curious. Manuring on poor land is by no means waste of money. Weeding should be carefully attended to. This is the first time we have heard of Acme chests causing cheesiness in tea.]

BIRD LIME.

SIR,—One of your correspondents lately asked about Bird Lime. It is composed of Linseed oil boiled *very carefully and slowly* till it is of the required thickness and strong enough to hold a bird. Be careful not to have too strong a fire, or the stuff cakes and spoils. It must be *ropy*.

L. S. E.

OAKLANDS DAIRY BUTTER.

SIR,—If your correspondent in your issue of the 10th instant, signing himself Pat Cloyne, would kindly address us again, he will receive the sample tin of butter at once. We can assure him that neither of his letters have been received, and that owing to similar complaints from others, we have already addressed the Postal authorities.

We are quite aware that punctuality in the despatch of orders may mean increased business, and no orders, however small, will be neglected.

Yours truly,

YELAHANKA, 15th July 1897.

J. PARTRIDGE & Co.

BLACK BUG PARASITES: A QUERY.

DEAR SIR,—In my last letter I asked for some information as to the best means of combating black bug on tea. Since then I have noticed that the area infected is far larger than I had thought, and I am therefore stopping my pruning, being convinced that the remedy will cause more loss than the disease itself.

So I have bethought myself of another way of procedure. Some months ago a Kotagiri planter wrote you an interesting account of the manner in which black bug on coffee was destroyed by the attacks of certain lady-bird parasites.

I should be immensely obliged if your correspondent could kindly send me a small lot of these lady-birds for introducing into my bug-stricken tea. I should gladly pay all expenses, and I am sure you would be kind enough to direct the cooly to my tote, which, as noted at foot, is in Coonoor.

COONOOR, 20th July 1897.

DEATH TO BUG.

OLD MYSORE ESTATES.

SIR,—I see Mr. Meppen has only lately been writing in connection with "Old Mysore Estates" which appeared long ago. I see he refers to me as ungenerous in my remarks. I have not the number of P. O. in which my letter appeared, nor copy of my letter, so am hardly in a position to write about it. But I cannot quite see how he makes out the remarks were ungenerous. So far as I remember, he was writing in such a way as to leave the impression that the old chicks were still doing well and referred to Kelagoor Estate. I showed that all the Mysore dis-

tricts had been virtually replanted with Coorgs and they were invariably used on new estates, simply because of the general failure of the old chick in the vital matter of crop. It yielded very poor crops, while Coorgs yielded much better. As to Greens and Cannons, he admits himself two of them were in Mysore service, and they got land cheap and cultivated cheap. Yet he says my statements are pure fiction. There were two brothers Green two being partners in one or two estates, the third owner of another. If not all actually in the service through their brother knew all about it and went in for it. Where is the pure fiction? The essential part of my statement was they got land cheap, followed by a poor style of cultivation and added to their pay or pension, for they were all service whether Mysore or Indian.

CHICOR

CHRISTIAN COOLIES.

SIR,—In your issue of July 10th there appears a letter on the subject of Christian Coolies and Planters above the *nom de plume* of "Middle View." I have no wish to enter into a discussion on this subject, but there is one sentence in your correspondent's letter to which I take strong exception. "Middle View" writes: "How often is the sad spectacle of a number of planters meeting together and partaking in a disgraceful drinking bout, the majority of the men present having to be carried to their beds by *their own servants*, or more sober friends." If such a state of things existed in the district to which "Middle View" belongs, it would be indeed disgraceful, but I do not at one moment believe it to be the case, and consider that it exists in the too fertile imagination of your correspondent. It may be true that in olden times planters rendered themselves liable to the charge of being heavy drinkers, but such is not the case nowadays. At one time in England men in the society habitually drank too much. We read how Addison was one generation and Pitt and Dandass in another were not at all in a fit state to conduct business, and how even judges were known to come into court before they had got over the effects of a heavy debauch. Such times have passed in England, and are not to return, and so with the planters of the present generation. Planters know that it is impossible to combine drinking and work, in the Tropics or indeed anywhere else, and I will venture to state that for sobriety they will compare not unfavorably with any other body of men, though there may be, in every other community, black sheep among them. I am a planter, for such I take "Middle View" to be, to make such an uncalculated aspersion on the characters of his brother planters shows, to say the least of it, a want of *esprit de corps*. It is highly to be regretted, and I trust he will see fit to withdraw his statement, which I consider to be a libel on the Planter Community.

"A SCOT"

[We strongly agree with our correspondent, and can only express sincere regret for having allowed the letter referred to appear unchallenged.—ED.]

COST OF LIVING ON PLANTATIONS.

DEAR MR. EDITOR,—I have noticed with amusement that your storm ex-Creeper's letter and mine have raised. Of course I forgot the dhoby *pro tem*. The fiend costs me Rs.4 a month and misuses my clothes horribly and does not forget him long.

I quite agree with Van Rensd that no proprietor should expect white men to work for him for less than Rs.100 a month; on a hundred I could live fairly well, but I buy no new clothes, save jail cloth ones, and should not expect to have any liquor for my friends, much less for myself. Van Rensd calls me a chimney; may be I am, but like the chimney "The Private Secretary," it is a chimney that smokes d

od tobacco. I still hold that a youngster can live well in Ceylon on Rs.79, but by living I merely mean food, etc., not much liquor, still less entertaining and amusement, and *no new clothes*. I do not mean to say that I lived in the Nilgiris on about Rs.60 a month from choice. I did not, and hope I'll never need to do it again. Having no liquor I did not mind a bit for myself, but when an occasional man did drop in, I felt then; when Van Resd has been like me in a country where whisky can't be obtained except very occasionally, he'll learn to do without like me.

If Van Resd thinks I mean that I was comfortable on the small sum I mentioned, he is mistaken. I meant to show that such a man would keep body and soul, and a very discontented soul at that, together. For comfort the amended estimate should be as follows:—

Original Estimate.	(Starvation Point.)
Butler	15
Food (shandy)	25
Tobacco	5
Medicines	5
Sundries	5
	55
Dhoby (forgotten)	5
	60

Amended Estimate.	
Liquor	20
2nd Servant	10
Pony and Syce	30
Extra Shandy	5
Tinned goods	10
Club	3
Library	3
Clothes	25
	106
	166

For that sum one should be able to live fairly well, not be ashamed to see a pal when he turned up, and may be save a little and yet be well groomed and fit to be seen, and I hope I may never have much less. Though I could do myself well on less, a youngster could not, as Van Resd says; and that salaries may rise is the wish of

ERODE, S. I. Ry.,
6th July 1897.

ON THE CHEAP.

RAINFALL STATISTICS.

DEAR SIR,—I enclose certain statistics as to rainfall in the Koppa Taluk of North Mysore. My estate on which the record has been kept is situated about the centre of the estates, so the returns may be taken as a fair average. Of course, rainfall varies greatly even on estates situated close to one another.

I have closed my averages up to 1894: it is in the last two years the monsoons have varied so much. 1896 is a very notable instance; and this year, at the most important part of it, we are far below the average.

Would you take up the question, and publish results in your paper? Statistics from North and South Travancore, Coonoor, North and South Wynaad, North and South Coorg, South Mysore, with my figures would cover the line of planting districts. Such statistics would be of great value, and answer the questions often raised whether other products than coffee could be expected to yield fair results in the several districts.

KOPPA, KADUR DISTRICT,
6th June 1897.

DIGBY T. BRETT.

NOTES.

Fractions omitted.

Rain gauge in use, Messrs. P. Orr and Sons' standard pattern.

Only once since 1880 has rain fallen in January; in 1882 1 inch 54 cents fell in four days.

The lowest rainfall was in 1881, 73 inches 50 cents. The

highest in 1882—1892, 192 inches 2 cents. For 1896 the rainfall was the third highest in the 17 years, and rain fell on the least number of days.

The average rainfall has been exceeded in only six years, namely 1882, 1883, 1888, 1889, 1892, 1896.

	Average rainfall				Actual rainfall		
	for				for		
	Ten years. 1880. 1889.	15 years. 1880. 1894.	1895.	1896.	1897 to 31st May.		
	In. Cts.	In. Cts.	In. Cts.	In. Cts.	In. Cts.		
January	18	13	65	...	...	...	5
February	25	37	49	...	...	...	...
March	2 65	2 57	2 14	...	71	1	77
April	3 58	3 63	1 5	2	90	2	27
May	25 6	22 56	32 44	44	75	...	...
June	48 85	46 95	36 17	63	68	...	...
July	29 57	29 71	24 3	45	17	...	...
August	11 96	11 48	8 92	5	21	...	...
September	9	8 66	6 76	3	13	...	...
October	2 71	2 56	1	3	16	...	...
November	98	67	...	1	15	...	...
December	...	...	...	...	...	...	...
Total...	134 79	129 29	Total. 113 65	169 86	...	...	...

Number of days on which rain fell from 1880 to 1896.

	1880.	1881.	1882.	1883.	1884.	1885.	1886.	1887.	1888.	1889.	1890.	1891.	1892.	1893.	1894.	1895.	1896.
January	...	...	4	...	...	...	...	...	1	...	...	...	...	...	...	1	...
February	...	2	1	1	...	1	...	...	1	3	3	...	...	3	5	4	...
March	...	4	9	5	13	5	5	2 15	6	2 12	7	10	3	12	8	3	...
April	...	5	11	11	7	5	14	13	5	11	9	8	10	16	6	5	9
May	...	30	22	27	28	23	26	27	24	26	28	28	23	23	25	28	24
June	...	31	30	31	31	29	31	29	31	31	31	30	30	31	31	31	31
July	...	28	29	29	30	31	30	29	25	31	30	22	31	30	28	31	30
August	...	26	22	22	21	28	22	18	18	13	25	26	21	25	23	21	21
September	...	19	8	19	22	17	18	16	12	6	17	12	13	13	17	16	13
October	...	8	13	6	3	6	2	3	10	7	3	8	2	3	8	3	7
November	...	2	...	2	4	4	7	1	...	2	1	...	...	1	...	...	2
December	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Total...	153	146	160	160	148	156	136	138	134	147	151	133	145	154	154	140	130

In 1897 to 31st May :—	February	March	April	May
	...	...	...	...
	1	...	4	8

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma loppings, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.64	"	Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE.

COFFEE.

Value of grafting.

To that large number of planters whose only knowledge of agriculture, and a very extensive knowledge it is too, is derived from planting, the theory and practice of grafting is quite unknown. We will suppose that among the tens of thousands of coffee trees on the estate, some few hundreds of scattered specimens have been noticed of exceptional vigour and grand cropping powers. Evidently a most desirable *jât* to perpetuate. But how to do it? If the seed are gathered, the percentage of plants that will take after their parents is likely to be small owing to the pro-

miscuous cross-fertilization that goes on. It is far better than sitting with folded hands, but cannot a better and surer way be found? Here it is that grafting comes to our aid. For a slip or scion taken from the parent tree and grafted on to a hardy seedling is absolutely bound to grow "true to name." And, if care be taken to use as stock a hardy and disease-resisting kind, the resultant grafted plant will almost sure to prove a very valuable plant indeed. We understand that some experiments are to be tried in this direction with cacao in Ceylon, and we trust, if ever our Planters' Experimental Garden becomes a fact, such work will be taken up in earnest in South India.

COFFEE-PLANTING AT MACKAY, AUSTRALIA.

AMONG recent arrivals in Queensland is Mr. John Dansey, an old Ceylon planter, who was forced to abandon coffee-growing in that island owing to the heavy losses inflicted by the leaf disease. He has also been in most of the other coffee-growing countries in the world—the East Indies, India, and Brazil, for instance—and comes to this colony with a full acquaintance with the different methods of cultivation and treatment. Mr. Dansey passed through Brisbane lately with the intention of going as far north as Cairns, "prospecting" for coffee land. On arrival at Mackay, however, he found himself in the heart of the finest coffee-growing district he had ever seen, and had no wish to go any farther. He was perfectly astounded at the wild profusion in which coffee trees grow and produce their fruit on the few plantations in the district which include coffee among their crops, and exhibits as specimens of marvellous prolificness two or three branchlets heavily laden with ripe cherries. He is deeply impressed with the capabilities of the northern coast lands. Nothing could be more conducive to favourable coffee crops than the heavy dews and fogs which he saw while in Mackay, and the absence of frosts was an additional feature which would help the industry to a favourable extent. In answer to a question whether he was satisfied with the prospects of coffee in Queensland, Mr. Dansey became quite enthusiastic. Pointing to his cherry laden sprigs, he expressed wonder that the drought and frost to which the trees had been subjected had had no appreciable effect. If our farmers only knew the value of coffee, he declared, they would soon grow it extensively. Since the abolition of slavery in Brazil the world's crop of coffee has been short, [Mr. Dansey must have got considerably out of touch with the coffee market the last four years! Ed.—P.O.] and merchants are eagerly seeking for new sources of supply in order to keep pace with the demand. He believes that for the next forty years there will not be a safer crop for Queensland planters, and that farmers who at present grow only cane should in addition plant coffee, and thus have two strings to their bow. He is convinced that coffee is far before cane as a profitable crop. The cost of preparation and planting is not so heavy to begin with; the labour of harvesting is also much lighter, and the crop ripening in the cool months there should be no difficulty in securing the necessary hands at the right time. Mr. Dansey tells of a plantation near Mackay where the owner has grown coffee for years with very little attention, and has made a good living by roasting the berries and selling it in the neighborhood. From one tree on this estate he saw a man pick a four-bushel bag of cherries and regards that as remarkable evidence of fertility of soil and suitableness of climate. Mr. Dansey intends to settle down in Mackay, where he has under offer a large area of virgin land eminently fitted for coffee. He will not confine his attention to the one crop, but will probably try cocoa cardamoms, and other tropical products in order not to have all his eggs in one basket, as he expressed it. He has come to Brisbane to find two or three others who are willing to add their capital to his and take a practical interest in the industry, and with the view he is advertising for partners in his enterprise. He returns to Mackay in a few days in order to get things under way for the planting season, which is rapidly approaching.—*Brisbane Courier*.

LEAF DISEASE IN JAVA.

I HAVE been looking over the "Agricultural Bulletin" of the Malay Peninsula for April 1891 which treats of the above subject, says a writer in the *Central African Planter*. The article is trans-

lated from the Dutch and gives an account of the observations of Dr. Burek and also the methods which he employed to combat the disease and which, in Java at least, seem to have been attended with considerable success.

The article begins by describing the disease and then goes on to detail the conditions for the germinating of the spores. Dr. Burek found that air, water and darkness were all requisites of successful germination. Light kills the spores when they are wet, but it has no influence upon them when dry. "The requisites for germination are thus; water, air, and more or less complete darkness. For the further stages it is requisite that it fall upon the under side of a coffee-leaf, for on the upper side are none of the stomata by which alone it can penetrate to the inner tissue of the leaf..... The spore will not germinate in air, however damp it be. They require fluid water, so that the leaf can only be affected when it is covered with drops of dew or rain."

Two plans have been invented by Dr. Burek for the eradication of the disease, both of which, we are informed, have been attended with highly satisfactory results.

"The first of these consists in the destruction of the sick spot in the leaf. There are two forms of apparatus in use. One of these consists of a small bottle of concentrated sulphuric acid through the cork of which a glass tube passes. The coolie is supplied also with a fine needle of bamboo. The tube passes about half-way down the bottle, which is filled for $\frac{1}{4}$ or $\frac{1}{2}$ of its length with sulphuric acid; by this arrangement there is no fear of the sulphuric acid escaping if the bottle be upset. The operator dips the needle into the acid through the glass tube and then punctures the spot with it, a very small quantity is sufficient to destroy the fungus, and the sick spot drops out of the leaf, leaving a hole where the mycelium has been at work. This little instrument has proved most successful, but it has the disadvantage that the quantity of acid cannot be regulated and it is also liable to get upon and burn the hands of the operator. The instrument maker, Heckking, at Sourabaya, invented a pair of scissors for cutting out the spots, which is now used in many plantations in preference to the acid bottle. The coolies apparently work faster with the scissors and more easily. A little tube on the scissors receives the cut-out bits, and when filled these can be thrown into water or otherwise destroyed in order to prevent infection spreading, but in wet weather it does no harm to throw them down merely on the ground."

This plan was tried on gardens of 220,000 and 170,000 trees respectively with good results, but in other cases the reports were not so favourable, and it is admitted that in some cases the disease may become so bad that this treatment is useless. The other treatment is the Preventive Method.

"This will indisputably become the most general. It depends upon the treatment of the leaves with a chemical re-agent which acts fatally upon the fungus, but does not hurt the leaf. The spores of hemileia are very sensitive to many kinds of re-agents, organic and inorganic, and experiments were made with chloride of iron, sulphate of copper, nicotine, boric acid, sulphate of quinine, extract of cinchona bark, cupric hydroxide, mixture of lime and sulphur, cupric sulphosteatite.

"The last mentioned gave no satisfactory result, it soon washed off the leaves. Iron chloride gave good results at first, but the application on a large scale was found to be unsatisfactory on account of its hygroscopicity, which prevents an accurate proportion being taken, and its liability to decomposition, by which it soon loses its effect and is likely to injure the leaves. It is fatal to the fungus in doses of 1 part in 7,000 parts of water. Copper sulphate is more successful. It does not decompose; it is very cheap and easily obtained. One part per thousand of water was used with favourable results, but it will still kill the disease when one part is mixed with 150,000 parts of water, so that the stronger solution dose would be quite strong enough even if diluted by rain or dew to a large extent.

"Sulphate of quinine is fatal at a strength of one in 2,000, and borax and boric acid at the same dilution."

One objection to copper sulphate is that the solution becomes condensed by evaporation and crystals are deposited on the leaf which burn it and make it look unsightly, especially when used for a long time consecutively. This, however, may be obviated by the addition of a little sugar which prevents crystallization, at least to a large extent.

Tobacco water, however, does not damage the leaves at all. The liquid is applied by a spray diffuser to the under surface of the

leaves, any fungus already there is, of course, killed at once, and as the liquid becomes condensed by evaporation, a thin layer of tobacco extract is left on the leaf. The next rain or dew re-dissolves the extract, and this prevents the spores which fall upon the leaf from germinating; gradually, of course, the rain washes away part of the tobacco and it is, therefore, necessary to treat the plant again. Tobacco water does not remain as long on the leaf as copper sulphate or iron chloride.

TEA.

Japan falling off.

Last year's exports showed a, to us, very gratifying falling off in the export of tea from Japan. As for the Japs, however, this fact has, as already reported, stimulated them to renewed efforts to improve the quality of their teas and to push their sale in the markets of the world.

Tea in 1837.

From an interesting article in the *Grocer*, we note that 60 odd years ago the duty was 2s. 1d. per pound, and the retail price was from 6s. 4d. to 14s. per pound. All China of course. The market rates were as follows: Bohea, 2s. 10d.; Congou, common, 1s. to 1s. 4d.; strong, 1s. 6d. to 2s.; Pekoe kinds, 1s. 10d. to 2s. 8d.; Souchong, 1s. 1d. to 2s. 1d.; Caper, 1s. 1d. to 1s. 5d.; Fine Orange Pekoe, 2s. 6d. to 3s. 6d.

China.

One of the most remarkable features in the introduction of improved methods of manipulating and firing the teas in Foochow by means of modern machinery has been the total absence of opposition on the part of the Chinese. When one remembers the strenuous efforts of the heathen Chinese to keep out railways and modern improvements of all kinds, it is evident that they must be fully alive to the desperate condition of their industry. Though, of course, it must be borne in mind that as the processes of growth and manufacture are in entirely different hands, the latter being undertaken by men of a better class, chiefly Cantonese, the absence of such opposition can be partly explained.

The Indian Market.

There are some short-sighted planters, we believe, who actually discourage schemes for creating a consumption of tea by the native population, on the grounds that it would encourage theft on the plantation. We have no sympathy with such pessimists, and note with pleasure the good work done in this direction in an unostentatious manner by the Indian Tea Supply Co., Ltd. It is nine years since this Company was started, and last year it disposed of close upon 100,000 lbs. of tea in the country, mostly to native consumers. The operations resulted, however, in a net loss of Rs.600 odd on a total turnover of 12,200 rupees odd. The quantity of tea sold was considerably less than the preceding year, which amounted to very nearly 1½ lacs of pounds, which showed, however, a loss of 1,800 rupees odd, which occurred from Bombay sales.

The Home Market.

INDIAN TEAS.—In the absence of public sales, the business transacted has been unusually small, says the *P. M. Review* of the 26th ultimo, and no change in values can be reported. As far as can be judged from recent reports, the effect of the earthquake on the different tea estates is not so serious

as was originally expected. The means of transport, however, have undoubtedly been materially interfered with, owing to the partial destruction of railways, and this will most probably cause considerable delay in getting tea forward, and may curtail the supply here for a time. As information is so incomplete, it is impossible to forecast the effect on prices, but up to the present they have not been influenced. This is no doubt in a measure attributable to the somewhat heavy stock in the bonded warehouses, and to the liberal supply from Ceylon. The first public sales since Wednesday week will be held on the 30th instant, and catalogues are already issued for 4,370 packages, including about 3,500 new season's import from several of the districts.

CEYLON TEAS.—No sales have been held this week, and the market has been practically closed. A fair amount of business has been transacted privately, but no great desire to buy has been exhibited by dealers, probably in anticipation of the large auctions to be held next week. These, as after the Whitsuntide holidays, will be divided into two days, viz., the Monday and Tuesday, when a strong market is expected.

INDIAN TEA ASSOCIATION.

[THESE notes were penned a week or two ago, but pressure on our space has blocked them out till now.]

The Persian Market. In the Report of the General Committee of this Association for the year ended 28th February 1897, we find a note to the effect that it has been impossible to find out how the rubbishy stuff sold in Persia under the name of Indian tea is exported to Persia. This wretched article has naturally prejudiced the sales of genuine Indian manufactured tea enormously in that market. An instance was given by the Kangra Valley P. A. of a large quantity of native-made tea that was sold at Dehra Dun at about 2½ annas per lb.

The three months prompt.

The proposal originally made by the Central Travancore Planters' Association to reduce the three months prompt to one month was submitted to the Committee of the Association in London for their opinion, which was that it would not work for the benefit of the producers, and that it would be unwise in the interests of importers to open up the question of sale conditions, as the deposit of £1 per chest, which is a great safeguard to sellers, was bound up with the custom of three months prompt. The London Committee also considered that the change might lead to a reduction in price, which would more than counterbalance any gain which might be obtained by curtailment of the prompt. The General Committee agreed in the main with the views put forward from London, and were of opinion that it would be inexpedient to push the proposal any further.

The American campaign.

This campaign, as we have many times pointed out, is being conducted with very considerable success. In 1895 Rs.92,545 was contributed, representing 80 million pounds of tea, or only about one-third of the total production in India. Last year, 1896, Rs.1,03,674 were obtained in the

same way, i.e., 4 annas per acre and $\frac{1}{2}$ anna per maund of tea. In July last the General Committee asked for the views of the Committee of the Bengal Chamber of Commerce on a proposal to form a fund for the exploitation of the American and other markets. The planters in Ceylon raised annually in this way upon a smaller acreage and production about double the amount raised in India by voluntary effort. The Committee of the Chamber in their reply pointed out that there would be very great difficulty in the way of any such impost being levied in India, as all the various Local Governments would have to be consulted, which would involve considerable legislative and administrative difficulties, and further contingencies also might arise. The Committee of the Chamber deprecated the idea, and considered that whatever had to be done in the direction of opening new markets for tea should be done voluntarily as hitherto, the efforts already made redounding to the credit and honour of the tea industry in India. In view of this letter, the General Committee did not consider it was worth while pursuing the matter further in face of the difficulties in the way of carrying out the proposals.

Finances.

The total planted area represented by the Association during the year is 275,445 $\frac{1}{2}$ acres. This shows an increase of 10,307 $\frac{1}{2}$ acres on the previous year; but the total area under cultivation is still a long way from being reached. The Committee trust that during the forthcoming year there will be an accession of gardens to the membership of the Association.

A TEA PEST.

In a recent number of the *Indian Museum Notes* is a mention of what may prove a very dangerous pest to tea.

Mr. W. D. Holland, of Balangola, Ceylon, wrote that it had completely defoliated several acres of tea on his estate, and that the ground was quite black with their droppings. Fortunately a species of *Ichneumon* preys freely upon them and eventually reduces their numbers. Another case is reported where 50 acres were stripped of all the leaves except the youngest shoots. In forwarding specimens of the pest (*Thoesa recta*, Hempish.) and its parasite (an Hymenopterous insect of the family *Ichneumonidae*), Mr. E. E. Green, the Honorary Government Entomologist of Ceylon, gives the following particulars:—

LARVA: Colour bright yellowish green with a quadrate saddle-shaped spot occurring on the middle of the bag; a chain of smaller red spots on the median line in front, and two or three similar spots behind. Oval; convex above, a marginal and two dorsal series of conical spinous tubercles.

Cocoon, compact, oval, dull green, fixed to tea leaves or stem.

On the 28th January, 1895, specimens of a small beetle, together with pieces of tea stems riddled by them, were sent to the Indian Museum through Mr. E. E. Green, of Ceylon, from Mr. G. Alston, Superintendent of Tea Estate, Craighead, Nawalapitiya.

The insect proved, on examination, to belong to a species of Scolytid beetle, which has not previously been reported to attack tea plants in India. Specimens were therefore forwarded to Mr. W. F. H. Blandford, who very kindly examined them and identified them as belonging to the species *Xyleborus fornicatus*, Eichhoff, a form closely allied to the often destructive species *Xyleborus dispar*, of Europe and North America.

The following is an extract from a letter furnished by Mr. G. Alston:—

The pest appears mostly in patches, but has spread very considerably since I first observed it in any numbers three years ago. There is no evidence of any previous disease in attacked trees.

Most of the trees attacked show no outward sign of the pest, except when almost every branch is attacked, when they turn rather yellow and stop flushing. Young trees about two years old before they are topped often snap off at the spot where the borers have made holes for their entrance or exit. Strong vigorous trees in good soil seem to be very little affected by it, and throw out good red wood even from badly bored stems. On the other hand, poor plants on ridges or poor soil seem to naturally feel the effect of it quickly, though in no case have I seen a tree killed by it. Isolated branches die off, but new branches come out in their place. As a rule, one can only tell an attacked tree (except in the case of young plants when the stems snap off) on pruning it, when the holes in the wood are very apparent. It (the beetle) does not attack the cut surface after pruning, but makes its entrance through the bark. In the case of young red wood it very generally goes straight down to the pith: in older branches I have often seen the wood riddled as if a charge of snipe-shot had been fired into it, with only one or two minute holes in the bark for exit or entrance. And yet in the case of vigorous trees, they seem to thrive notwithstanding. Since 1893 the pest has spread very much, and become more general, though I cannot say that I see much difference in the fields that were attacked then."

The writer, in the foregoing account of the pest, practically suggests the remedy—namely, either not to plant in poor soil, or, if the soil is poor, to improve it, and thus to strengthen the plants against the attack—the great object of all medical treatment ever known where.

To prevent the spread of the disease the affected branches should be cut off and burnt.

DISTRICT ASSOCIATIONS.

LOWER PULNEYS.

PROCEEDINGS of the Committee Meeting held at the Muroom Bungalow on the 7th April 1897.

The Honorary Secretary said that before beginning the business of the meeting he regretted to have to record the death of our oldest and pioneer Planter, Mr. Eugene de Fondclair, who died on the 25th of March. The deceased gentleman was one of the original members of our Association. When the first meeting of the Planters was called with the object of forming an Association, Mr. de Fondclair himself was not able to be present, but he wrote to the Chairman of the meeting requesting his name to be put down as a member at once, and he has always taken a keen interest in the affair of the Association. We shall miss him, not only as a member of the Association but also as a genial companion and keen sportsman. His absence will also leave a void in Kodaikanal society, in which he was a general favourite, and in which place he spent a great portion of his life. Though Mr. de Fondclair did not actually introduce Coffee Arabica into the Lower Pulneys he was the first to open an Estate here with the object of making an industry of its cultivation. He opened up an Estate at Manalore in 1854, and subsequently at Peryoor in 1860, and it was not until after 1867 or thereabouts that others, seeing his success, opened up other large areas in the District. Mr. de Fondclair was on his Peryoor Estate when his attack of fever came on, and was taken down to Dindigul and to Medical assistance as soon as possible by two of the neighbouring Planters, but he only survived two days and passed away at 11 P.M. at the Dindigul Club. His family are in France, and so far as is known I have left no relations in India.

The Dindigul-Pothanur Railway.

Mr. W. H. Gerrard proposed that the Honorary Secretary be asked to write to the Traffic Manager, Madras Railway, on this subject, and since the Line in question was surveyed by Engineers deputed by the Madras Railway Company, ask him if he could give us any information on the following points:—

- (1) The date on which this survey was completed.

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(2) The Towns and Villages through which the route passes and at which there will be Stations.

(3) Whether he can let us have a plan of the surveyed route, and,

(4) Whether he is of opinion that the construction of this Line will be taken in hand within any reasonable time. *Carried.*

2. The Ardaloor Dispensary.

Read Original Resolution of the Association, dated 23rd July 1894.

"Proposed by Mr. W. H. Gerrard and seconded by Mr. J. Heimpel, that the District Surgeon be requested to open a small Dispensary at Ardaloor."

Read letter from Surgeon-Major Reeves, District Medical and Sanitary Officer, Madura District, dated 20th January 1896, suggesting the transference of the Thandigudi Dispensary to Sholakardu, endorsements on same, including the endorsement of the L. P. P. A. accepting the suggestions of the District Medical and Sanitary Officer.

Read Resolution of the Taluq Board, dated 14th March 1896.

"The Board approves, on the whole, the District Medical and Sanitary Officer's proposal. There is a Budget provision for building a new Dispensary, 1896-97. The Board, before building the dispensary at a high cost at a new and untried site, is of opinion that the dispensary should at once be moved to some temporary accommodation at Sholakardu. If after four or six months' trial the change of site proves a success, the construction of the new dispensary may be commenced."

Read Petition of the residents of Thandigudi, addressed to His Excellency the Governor in Council of Madras, undated.

Read Resolution of the Dindigul Taluq Board in consequence thereof, dated 27th March 1897.

"The Board are unanimous, with the exception of Mr. Newport, in thinking that the dispensary at Thandigudi should not be removed to Sholakardu. Their reasons are that Sholakardu is an unimportant village, that it is less accessible from the surrounding villages than Thandigudi, that it is less central with regard to the principal villages in the Lower Pulneys than Thandigudi, that the attendance at Thandigudi dispensary, which had fallen in 1895 from 2,355 to 1,440 rose to 3,052 in 1896 and that a dispensary at Sholakardu would mainly benefit the few Planters in the neighbourhood and the coolies employed by them. Mr. Newport as Secretary of the Lower Pulneys Planters' Association represents that a dispensary at Thandigudi is necessary, but that one at Sholakardu is equally necessary."

Mr. Newport said:—The original resolution of the Association must be borne in mind throughout the discussion of this matter and also the fact that we as an Association did not, now or at any time, suggest the transference of the Thandigudi Dispensary to Sholakardu, both the suggestions of the village of Sholakardu and the transference emanating from the District Medical and Sanitary Officer of the District. The petition of the Thandigudi residents which I have just read, I had not seen and knew nothing of until the meeting of the Taluq Board. It looks as though it had been carefully kept from us; even this copy I had some difficulty in obtaining, and finally did so through the kindness of Mr. Hickey, Pleader of Dindigul, and not through the President of the Taluq Board—as we had a right to expect, I think, since the subject is one that was originally mooted by the Association and since the present President's predecessor in office was courteous enough to do so. I much regret this, as the fact of the last resolution of the Board having been passed (vetoing all previous decisions of the Board as it did) may be looked upon as accepting without comment as facts all the statements in the petition, upon which it has acted; whereas the petition in question is full of gross exaggerations, misleading facts and absolute mis-statements. The whole petition is drawn up in such a way as to show a very good case for the petitioners. There is no objection to this, and least of all from the Planters' Association, for it must be remembered that the residents of Thandigudi are many of them Planters too. But it apparently goes out of its way to make out a bad case for Sholakardu. It says Sholakardu is an unimportant village of 30 houses and 100 inhabitants. On seeing this, I took the trouble to go over, verify it, and I counted 79 large houses there, many of them containing 4 and 5 large rooms and housing 4 and 5 separate families. The inhabitants amount to nearer 500 than 100 souls. And as for Thandigudi I have reason to think that the figures are exaggerated. However this may be, that Sholakardu or Ardaloor are as large as Thandigudi we don't claim, and nobody did claim, but that either of

the former would be more central for the majority of the hill residents we do claim.

The residents of Thandigudi in their petition have shown a number of villages (so called—many of them are mere hamlets of 3 or 4 houses) within an average radius of some 7 and 1/4 miles or so, while round Ardaloor, for instance, we can show a *larger* number of villages, a *larger* population, and a *larger* total amount of assessment paid to Government (directly, or through the Zemindars), *without* taking into consideration the Estates under Europeans, (which are, apparently, in the opinion of the President of the Taluq Board quite a negligible item) *within an average radius of 5 miles or so.*

With regard to the last resolution of the Board, though I think I may say that we are in accord with the residents of Thandigudi in their request, and are quite ready to accept a decision from the Sub-Collector to the effect that their Dispensary shall not be moved, still I take exception to the way their resolution has been worded and rushed through the Taluq Board without due consideration on the part of the members, while they admittedly knew little or nothing about it, and also the implied refusal to consider our claims to a dispensary at all."

At the meeting of the 27th March, the President in open meeting asked whether "anybody besides Mr. Newport knew anything about the matter," to which two members only replied. One of these had been Tahsildar of Kodaikanal from about 1890 to 1892 (it was only in 1891 that the hill villages of the Kanavadi Zemindari were included in the Kodaikanal Taluq, and they are still under the jurisdiction of the Tahsildar of Nellacotta in all revenue matters). These gentlemen knew Thandigudi, but only one of them had been to Ardaloor and neither of them to Sholakardu! The President and Sub-Collector himself *had not been on to the Hills at all*, and no other members of the Board knew anything about the matter, and yet the President, also in open meeting, said that he thought the Board had been very weak in passing the first resolution and promptly drafted and passed the second, which in itself constitutes a most sweeping criticism of the opinion and suggestions of not only more experienced Government Officials, but of Officials that *had* been on to the Lower Pulney Hills and seen for themselves some at any rate of the villages referred to.

Sholakardu is a rising village and not so unimportant as the Board seems to imply. It *is*, however, out of the usual run of Government servants' tours, and also is in the Kanavadi Zemindari, therefore Government Officials never go there and consequently know nothing about the country round. That it is less accessible from the surrounding villages I deny. Thandigudi is, as any one that knows the District can say, surrounded by hills and difficult of access from many parts of the Lower Pulneys. Ardaloor, on the other hand, is *more* accessible than Thandigudi for a larger number of inhabitants of the hill tracts. That it is less central I deny. Even by the showing of the residents of Thandigudi their village is on the extreme west of the Lower Pulney plateau, *there being no villages at all due west of it.* The remark that it would mainly benefit the few Planters in the neighbourhood is uncalled for, and moreover the President of the Taluq Board has no foundation for it. Even if it were so, it should not be made a reason for refusing us a dispensary, if we can show good reason for asking for one, and secondly as for the "few Planters" Europeans are *not* especially referred to the President informed me, on being asked, at the meeting. If the Board thinks Native Planters are few in the neighbourhood, we can but regret their gross ignorance of the facts and ask them to come and see for themselves. With regard to the last paragraph of the resolution, it is very boldly put and apt to be misleading, nor are they the words I used, which were—that while we were in sympathy with the residents of Thandigudi, and allowing their claim to a dispensary there, I wished my objection as Secretary of the Lower Pulneys Planters' Association recorded only in so far as the resolution meant a refusal on the part of the Board to take into consideration our claims to a dispensary on our side of the Hills. And since the resolution was worded as it is, I can but conclude that this was what the President of the Taluq Board meant us to understand, though I hope I am wrong in this.

Resolved—That this Association regrets the hasty manner in which the above resolution was passed, and regrets that the papers having reference to this matter were not sent to them for opinion and comment as the

previous President of the Taluq Board very courteously did do. They would also respectfully ask why it was that the original resolution of the Board was not carried out, and request that a trial dispensary, or a branch of the Thandigudi dispensary, be opened at Ardaloor as at first asked by the Association.

(3) *Lady-birds and green-bug.*

Mr. Newport said that he noted with alarm the re-appearance of Green-bug this year and its rapid spread. It was possible, he thought, that from our constant recurrence to the subject that some Associations might think that this was merely a fad and our particular hobby, but that he could assure them that if they saw the effect of Green-bug on our coffee they would not think so. The effect of Black or Nilgiri Green-bug was mild to that of the Ceylon Green-bug. He hoped soon to hear that Government had received a reply, and a favourable one, from Hawaii. He read a letter that appeared in the *Ceylon Observer* from Mr. E. E. Green suggesting the exchange of some Ceylon Lady-birds with those of Southern India, and his reply to it, which appeared in *Planting Opinion*, and the Editor's remarks on the same. He said he thought the experiment was well worth trying—anything was worth trying. The spraying operations that they were carrying on did not seem to have any appreciable effect. He also read a letter he had received from Mr. E. E. Green in which Mr. Green had mentioned certain species of Lady-bird that he said were preying on the *Lecanium Viride* in Ceylon, but were kept from increasing by their natural enemies, and suggested an exchange with *Chilocorus Nigrinus*.

Read Mr. Newport's reply to this letter. Mr. Newport said he regretted that there were no Lady-birds to be found now, and he did not expect that they would be found in sufficient numbers to despatch until next month. The Association approved Mr. Newport's procedure.

(4) *Famine Funds.*

Read Notice from the Acting Sub-Collector of Dindigul calling a Meeting at Dindigul on the 10th instant for the Indian Famine Charitable Relief Fund.

Read Letter from Honorary Secretary, I. F. C. R. Fund, Calcutta, dated 20th February 1897.

Read Letter from R. F. Grimley, Esq., Acting Sub-Collector, Dindigul, enclosing copy of the District Committee's notice in connection with the I. F. C. R. Fund.

Resolved—That the Honorary Secretary's reply to these letters to the effect that the Planters are already subscribing to the fund through the U. P. A., and that if they feel inclined to subscribe further, they will do so through the U. P. A., which they consider the proper medium for their subscription. That the Honorary Secretary also attend the meeting at Dindigul on behalf of the Association if convenient.

(5) *Address to the Queen-Empress.*

Read Circular, dated 19th March 1897.

Resolved—That this Association approves of the presentation of the Address and of the inclusion of the words "through our executive officers."

It would suggest, however, that instead of another subscription list being sent round, that the total cost of the Address and Casket be divided up between the number of votes on the U. P. A. (which are now 44) and each Association pay its share according to the number of votes it holds in the U. P. A.

Members of Committee ... { L. J. CREED, Chairman.
W. H. GERRARD, Vice-Chairman.
HOWARD NEWPORT, Hony. Secy.

PROCEEDINGS of the Committee Meeting held at Dindigul on Saturday, the 1st May 1897.

(1) *Address to the Queen-Empress.*

Read Circular, dated 12th April 1897.

Recorded that the Association has already (at last Committee Meeting) suggested a method of defraying the cost of the Address and Casket, which has been sent up to the Secretary, U.P.A.; and the Association has also already expressed its willingness to abide by the decision of the majority.

(2) *Individual Membership of the U.P.A.*

Read Circular, dated 20th April 1897.

Resolved that the copies of the Circular be sent to members, and the subject be brought up for discussion at the Annual General Meeting in July.

Read letter, dated 21st April 1897, from Secretary, U.P.A., in reply to Honorary Secretary's letter asking for information. Recorded.

(3) *Estate Statistics.*

Read letter from the Secretary, U.P.A., dated 23rd April 1897.

Resolved that the Statistics Forms received from the Secretary, U.P.A., circulated to members at once, with the request that they will kindly in and return them to the Honorary Secretary as soon as possible, and that required statistics be sent in to the U.P.A. Secretary as soon as obtained.

(4) *Famine Fund Subscriptions.*

Read letter, dated 23rd April 1897, from the Secretary, U.P.A.

Resolved that the U.P.A. Secretary be informed that although we cannot say definitely, we do not think it probable that we shall be able to collect any more Famine Fund Subscriptions before the Annual General Meeting of the U.P.A.

(5) *Filing of the U.P.A. Circulars.*

Read U.P.A. Secretary's Circular, dated 28th April 1897.

Resolved that as the Honorary Secretary has most, if not all, of the Circulars in question bound, that he ask if the loan of this book would be of any use to the Secretary, U. P. A.

(6) *Meetings of District Associations.*

Read U.P.A. Secretary's Circular, dated 28th April 1897.

Resolved that the Honorary Secretary be asked to comply with the request of the U. P. A. Secretary, sending him as long notice as possible, and to inform him that the Annual General Meeting of the Association will be held during July.

U. P. A. Proxies.

Read U. P. A. Secretary's Circular, dated 28th April 1897.

Resolved that this Association approves of the Form of General Proxy (to be used as well as the Original Form), giving as it does full discretionary powers to the holder. But, at the same time, thinks that the power ought not to extend to voting upon such subjects as may be brought forward with the general consent of the U. P. A. Meeting after it has assembled; and on which subject or subjects, therefore, the Proxy-Giver can have had no opportunity of forming any judgment or of discussing with his Proxy-Holder.

Read Circular from the Chairman, U. P. A., dated 12th April 1897. Recorded.

Read letter from the Secretary, U. P. A., dated 21st April 1897 acknowledging receipt of cheque covering the Association's subscription to the U. P. A. for the current year, and for Famine Fund Subscriptions received through the Honorary Secretary. Recorded.

Members of Committee. { D. L. J. CREE, Chairman.
W. H. GERRARD, Vice-Chairman.
HOWARD NEWPORT, Hony. Secretary.

NOT EVEN IF IT COST TWENTY SHILLINGS.

A NOTABLE percentage—about one-third, I think—of the power of a steam engine is used up in overcoming the friction of its own parts. Hence inventors are constantly testing devices to reduce friction. Yet they can never overcome it; and the resistance created by it represents power (and hence expense also) absolutely lost.

Now the human body is a machine propelled by heat, exactly as an engine is; and anything that retards it may be considered as friction. Very good, then.

You have noticed great differences in your own vigour. Some days you work easily, and on others with difficulty. This is so whether you are chiefly a muscle-worker or a brain-worker; or a mixture of both—as most people are. Occasionally you are able to do more work in a day than at other times you can do in three. It is the odds between walking on smooth, hard level ground and dragging yourself uphill through wet clay. What wouldn't lawyers, authors, clergymen, and all other brain-workers give for something having the power to keep their minds clear and strong? Or body-workers for something that would prevent aching, weakness, and fatigue? Do I know what will do it? No, I don't. If I did I could retail the secret for more money than is stowed away in the Bank of England. But I do know one thing, and will tell it you in a minute—for nothing.

First, however, we will talk of Mr. J. B. Goss and the friction he tried so long to overcome. Mr. Goss is a large farmer living at

Stradsett, near Downham Market, Norfolk, and is well known in his district. When the farmers meet on market days he often speaks of his experience and how he came out of it.

In order to cover it all he has to go back fifteen years—to about 1878. At that time he began to feel the signs of some disease which he could neither account for nor understand. At first he merely realised that he was out of condition. His work became less and less a pleasure and more and more a task. From his business his thoughts turned upon himself, and no man can work well in that form. Then he and his victuals began to disagree, which is a state of things to make a man ask what can the reason be?

He had a well-provided table, of course; yet he often sat down to his meals and couldn't touch a morsel. Mr. Goss knew that this would never do. If a man expects to live, he *must* eat. There are no two ways about that. So he ate more or less—although not much—without the stimulus of an appetite; he forced it down, as you may say. But this wouldn't do either. When the stomach goes on strike it can't be *whipped* into working before the question at issue is properly settled.

Thus it ended in his having great pain and tightness at his sides and chest. "I was constantly belching up a sour fluid," he says, "which ran out of my mouth like vinegar. I had a horrible sensation at the stomach for which I was not able to find any relief. For nights together I could get no sleep; and in this general condition I continued for five years, no medicine or medical treatment doing more than to abate some of the worst symptoms for the time being.

"In the early part of 1883 I heard of a medicine which was said to do good in cases like mine. Whether it would help me of course I had no idea. After so many things have failed, one naturally has no faith in a new one. Yet I got a supply and began with it. In a short time it was plain that I had come upon the real remedy at last. My food agreed with me, and soon all pain and distress gradually left me. Since then (now ten years ago) I have kept in the best of health. If I, or any of my family ail anything, a dose of Mother Seigel's Curative Syrup—the medicine that cured me—soon sets us right. We have no need of a doctor. (Signed) J. B. Goss, March 24th, 1893."

Mr. Goss once said that if Seigel's Syrup cost 20s. a bottle he would not be without it in his house. We can easily believe him. Considering what it did for him—and does for others—it would be cheap at any price. Yet, like plenty of things of the highest practical value, it costs but little. The reader can imagine under what difficulty and friction Mr. Goss must have done what work he did during those five years' suffering with indigestion and dyspepsia.

This then, we know; that life's friction and loss of power comes chiefly from that single disease, and that ease arises from the use of Mother Seigel's great discovery.

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THE "MADRAS STANDARD."

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1. For each circulation locally and by post Rs. 25.
2. For each do. locally only " 15.
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(This excludes extra postage where the weight of leaflets necessitates such.)

Advertisement charges are strictly payable in advance, except by w. approved customers.

MARKET SUPPLEMENT.

SATURDAY, JULY 24, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (July 2, 1897) says:—After the interval caused by the Jubilee Celebrations the Public Sales were resumed last Tuesday and the fairly large quantity offered met a slow demand at lower rates, except for colory and desirable parcels which realized steady prices.

About 1,200 bags East Indian were catalogued, of which a great part were small and undesirable lots; these were partly bought in, the remainder being sold at lower and irregular prices; desirable parcels went steadily. Larger supplies of Central American and Colombian (of which the sales chiefly consisted) went off flatly at an average decline of about 2/- except for colory description and favourite marks, which were unchanged to a 1/- lower. Terme markets have been weak, prices touching the lowest known for many years. The total production in Brazil for the Season just ended was 8,680,000 bags.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Fortnight ending June 30th, 1897, says:—Bank rate 2 1/2%. Bombay Exchange closes at 1s 2 1/4d. Brazil Exchange 7 1/2d. Rupee paper 3 1/2% 63. Silver 27 1/8d. per oz.

Public sales re-opened on the 29th inst., with a flat tone, the trade shewing no inclination to buy except at a lower price, and we have to report a decline of about 1s. per cwt. on most kinds except finest, which continue to be well competed for. The small quantity of Plantation Ceylon offered sold steadily. Brazil market are steady at the decline.

The Dutch Sale was held on the 22nd inst. and comprised 19,100 bags 42 cases, which met with a good demand at fairly steady prices, good ordinary Java selling at 46 1/2 cents against 46 3/4 cents in the May sales.

Daily receipts have averaged 8,928 bags in Rio and 7,428 bags in Santos.

Futures owing to increasing receipts in Brazil, have again shewn a declining tendency, and after considerable weakness and a subsequent slight rally, the market closes steady at a decline since our last of 1s 9d to 2s. viz.:—Good average Santos in Havre, September delivery, fcs. 44.75, in Hamburg pf. 37 1/4, and No. 7 low ordinary Rio in New York \$7.00.

To-day's London official quotations are:—

	July	Sept.	Dec.	March	May
Rio	32/6	33/-	33/6	—	—
SANTOS	35/6	35/9	36/3	36/9	37/3

We quote:—

Ceylon, mid. to good mid.	100/ @ 106/	Costa Rica, mid. to fine...	81/ @ 108/
Do. small to low mid.	88/ „ 99/	Do. ord. to low midling.	61/ „ 80/
East India, mid. to good	mid .. 90/ „ 104/	Jamaica, good to fine ord.	52/ „ 67/
Do. small to low mid.	78/ „ 89/	Do. greenish to fine	colory... 74/ „ 120/
Guatemala, mid. to fine...	77/ „ 102/	African	... 32/ „ 34/
Do. good ord. to low	mid .. 65/ „ 76/	Colombian, ordinary	... 54/ „ 60/
Salvador, good ord. foxy	greenish... 57/ „ 58/	Do. good ord. to	low mid... 61/ „ 77/
		Do. mid. to fine...	78/ „ 98/

The following are the total receipts in Brazil for the past three crop seasons:—

	1896-97.	1895-96.	1894-95.
	Bags.	Bags.	Bags.
RIO	3,579,000	2,898,000	2,712,000
SANTOS	5,101,000	3,091,000	3,987,000
	8,680,000	5,489,000	6,699,000

Auctions:—

72 casks and tierces 16 barrels and bags Plantation

	Ceylon		@	86/	@	11
1,259 bags	224 bags Mysore	...	...	84/	...	10
East India	253 bags Travancore part sold	...	...	98/	...	10
	685 bags Neilgherry	...	...	70/	...	10
	72 bags Shevaroy	...	...	83/	...	10
	25 bags East India (cherry)	...	...	68/6	...	—
479 barrels	89 bags Jamaica	...	...	45/	...	10
1,628 bags	Costa Rica	...	...	54/	...	7
3,039 bags	Guatemala, chiefly sold	...	...	55/	...	10
1,302 bags	Salvador, chiefly sold	...	...	50/	...	7
2,127 bags	Nicaragua, part sold	...	...	52/	...	6
367 bags	Mexican, small part sold	...	...	85/6	...	—
36 bags	Vera Paz	...	...	82/	...	9
2,552 bags	Columbian, part sold	...	...	47/	...	9
90 bags	Bolivian bought in.	...	...		...	
150 bags	Guayaquil bought in.	...	...		...	
14 bags	Peruvian bought in.	...	...		...	
17 bags	Trinidad	...	...	52/	...	—
40 half-bales	Mocha bought in.	...	...		...	
157 bags	Bahia bought in.	...	...		...	
55 bags	Liberian Wynaad bought in.	...	...		...	

On Quay Terms:—

120 bags Santos, without reserve at 35/6					
Landed last week 289	tns.	Deliveries 640	tons.	Stock 14,079	to
Do. last year 372	„	„ 675	„	„ 11,613	

CINCHONA.

The cinchona-bark auctions held in London, on June 29, were of fair considerable extent. The offerings included:—

	Pkgs.	Pkgs.
Ceylon cinchona	337 of which	253 were sold
E. Indian Cinchona	1,845 „	1,530 „

Throughout the auctions there was a very steady demand, almost all agents buying a fair proportion of bark, and only a few parcels were bought in on account of the high limits placed upon them. A considerable part of the Ceylon bark, and several parcels of the East Indian, were imported between three and six years ago. Druggists' barks were particularly well competed for. The average unit may be placed at to 1/4d. per lb., but for some lots a full penny-unit was reached.

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report dated July 2nd, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	29,273 packages.	116,391 packages.	3,764 packages.
1896-1897...	26,102 „	133,990 „	5,737 „
8,907 pkgs. INDIAN	Total 52,900 packages were offered in public auction this week.		
43,187 „ CEYLON			
806 „ JAVA			

The market remained closed, as far as public sales are concerned, Indians and Javas from the 16th to the 30th inst., and for Ceylons from the 15th to the 28th inst.

The damage done by the recent earthquake to Tea estates in India has been ascertained to be less severe than was at first apprehended, very few having materially suffered.

Indian. The better liquoring of the New Season's Teas sold with good competition at steady prices, Darjeeling especially being in request and bringing full valuations. Inferior kinds met with rather less attention, although quotations showed little change. Old Season's Teas were

SUPPLEMENT TO "PLANTING OPINION."

slightly neglected and sold irregularly. The official telegram from the Indian Tea Association gives the exports from Calcutta to the United Kingdom from 1st April to the middle of June as 6,295,000 lbs., against 6,49,000 lbs. for the same period last season.

Week's av. of New Season's Tea sold on Garden Account, 1897, 4,436 pks., av. 8½d. 1896, 2,208 pks., av. 9d.

	1897.		1896.		1st June to date 1897.		1st June to date 1896.	
	Pkgs.	Price.	Pkgs.	Price.	Pkgs.	Price.	Pkgs.	Price.
Assam	1,056	p 8½	448	p 7½	2,542	p 9	1,556	p 8½
Assam and Sylhet.	814	p 6½	267	p 7½	1,062	p 6½	2,277	p 7
Darjeeling	1,566	p 9½	600	p 10½	2,577	p 9½	2,139	p 11
Goavars	390	p 8	100	p 11	761	p 8½	338	p 9½
Kangra, &c.	25	p 5½	160	p 7½	25	p 5½	262	p 7½
Nilgherry	60	p 6½	—	—	133	p 6½	130	p 8
Perai	—	—	—	—	106	p 8½	—	—
Travancore	525	p 5½	633	p 7½	1,908	p 6	3,106	p 7½

Total sold on Garden Account 1st June to date 1897, 9,114 pks., av. 8½d. 1896, 9,808 pks., av. 8½d.

Comparative prices of Indian Tea in London:—

		1897.	1896.	1895.	1894.
DUST.	(Fair ordinary, dark liquor)	3½d	4½d	4½d	4d
FANNINGS.	(Red to brown, strong rough liquor)	4d	5d	4½d	4½d
BROKEN TEA.	(Brownish to blackish, strong liquor)	6½d	7½d	6½d	5½d
PEK. SOUG.	(Blackish greyish, useful liquor).	6½d	8d	7½d	7d

		1897.	1896.	1895.	1894.
PEKOE.	(Greyish to blackish, some tip, useful liquor)	8½d	9d	8½d	9½d
PEK. SOUG.	(Blackish greyish, inferior liquor).	5d	5½d	5½d	5d
PEKOE.	(Blackish greyish, some tip, inferior liquor)	6d	6½d	6½d	6d

Ceylon. The heavy auction, which was the accumulation of two weeks, was larger than any Ceylon Sale previously held in one week. The Teas met with fair competition and sold without change in quotations, except for Pekoes and Broken Pekoes of good quality, which brought rather dearer rates. Quality, as is often the case at this time of year, shows a falling off from earlier shipments. Average for week 7d against rather over 7½d last year.

Ceylon Tea sold on Garden Account 1st January to date 1897 546,090 pks., av. 7½d. 1896, 516,771 pks., av. 8½d.

Comparative prices of Ceylon Tea in London:—

		1897.	1896.	1895.	1894.
PEKOE SOUG.	(Ordinary leaf; fair liquor)	6d	6d	6½d	5½d
PEKOE	(Ordinary leaf, little twist; fair liquor)	7d	7d	7½d	7d
PEKOE SOUG.	(Rather bold leaf; indifferent liquor)	5d	5d	5½d	4½d
PEKOE	(Somewhat bold leaf; indifferent liquor)	5½d	5½d	6½d	5½d

Java. The 806 packages brought forward comprised Teas of direct import and sold with good general competition. An invoice from "Perbawatte Estate" brought an average of 10½d per lb.

MOVEMENTS of TEA in LONDON (in lbs.) during JUNE.

	IMPORTS.			DELIVERIES.			STOCK.		
	1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.	1895.
INDIAN	2,092,857	2,077,521	1,827,783	9,018,317	8,587,849	7,717,224	25,309,752	20,240,282	22,925,934
CEYLON	10,709,464	10,158,358	8,822,542	7,868,446	7,333,190	6,933,554	22,794,198	21,382,702	19,610,740
TOTAL lbs.	12,802,321	12,235,879	10,650,325	16,886,763	15,921,039	14,650,778	48,103,950	41,622,984	42,536,674

Bank rate 2 per cent. Exchange on London three months sight.—Calcutta 1/2½, Colombo 1/2½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8½d.) July 2nd.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	60 p	6½	...	...	22½c	†7½	21½c	†7½	17	†5½	...	...	...	...
Tudor Hall	...	...	...	...	...	...	...	...	...	...	...	...	...	...
South Wynaad	25	5½	3	8	5	5½	...	...	17	5	...	...	...	...
Richmond	...	5½	...	...	...	...	...	...	...	...	...	...	...	...
Travancore	525	5½	...	...	63	5½5½	41	7	22	5½	...	...	7	3½
Carady Goody	133	6	...	...	69	4½	45	6½	14	4½	...	...	2	2½
Goatfell	130	5½	...	...	...	...	...	...	14	†5½	...	...	...	...
Isfield T Co., Isfield.	14	5½	...	...	...	...	63	6½6½	32	5½	...	...	16	4
Vembenard	248	6	77	6½	60	5½	...	...	...	...	...	...	...	...

Teas marked thus † are New Seasons.

COIMBATORE COFFEE WORKS.

COFFEE CURED AND SHIPPED TO LONDON
ON PLANTERS' ACCOUNT.

ADVANCES MADE ON CROPS ON MODERATE TERMS.

Tools, Roofing, and Planters' Stores kept in Stock; Poonac, Bone and other

Manures supplied and mixed in any proportions.

T. STANES & CO.,

Coimbatore and Coonoor.

w.

OAKES AND CO., (Limited,)
OOTACAMUND.

Grand Clearance Cash Sale.

COMMENCING **JULY 15th, 1897.**

Great Reductions in all Departments.

KINDLY WRITE FOR SALE LIST.

SPECIAL LINES FOR PLANTERS.

Black Grain Hide Waterproof Boots, very strong and durable	...	Original price Rs. 21-0	Reduced to Rs. 15-
Flannel Shirts with collars in a variety of patterns	...	...	Rs. 4-
Twill Lining Shirts, very soft and comfortable, in Stripes, Plain colours and White	...	...	each Rs. 3-
Black Vulcanized Waterproof Coats	...	...	...
„ Paramatta Regulation Inverness Capes	...	Original price Rs. 19-0	Reduced to Rs. 13-
Tweed Patterns	do. do.	„ 45-0	„ „ 38-
Natural Wool Underclothing, Wool Sweaters, Cardigan Jackets, all very much reduced.	...	„ 40-0	„ „ 30-
A splendid line in Tweeds, Flannels, Breeches materials, and Covert Coatings, also reduced.			
Samples, Prices and Measurement Forms on application.			
Maistries' Dark Blue Melton Cloth Coats, Rs.3 during sale.			

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, JULY 31, 1897.

[No. 18.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; and Quarterly, Five Rupees, including postage.

ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 6th August 1897.

Nilgiris.

SHOLUR, 29th July.—A fresh burst of this miserable monsoon seems to have set in; during the last two days the wind has been high and 1-26 fallen, making a total of 26-68 to date. Highest and lowest temperatures 72° and 60° respectively. Tea was beginning to flush well, but want of sun and high winds re-commencing have checked growth. Health good, but prices of grain still above normal.

South Mysore.

MUDIGERE, 21st July.—*Weather.*—Taking it all round a light monsoon up to date, and a splendid season for planting and in fact for all sorts of tote work. A very pleasant contrast against the remembrance of last year. *Plant-diseases.*—A few spots of leaf rust noticeable on some places. *General Health.*—Still a lot of fever amongst coolies. *Labour.*—The promise of ghaut labour coming up early this year has not been fulfilled, and many estates are short-handed in consequence. Village coolies, too, are all busy with their paddy planting and are at a premium.

Coorg.

POLLI BETTA, 27th July.—*Weather.*—In my last report the decimal point has been omitted in the amounts of rainfall given. During the past week it has been splendid coffee weather. On no day did the rainfall exceed 60 cents, and there were intervals of sunshine. The total rainfall for the week was not much over 3 inches. Sunday was another light day and yesterday (Monday) was a fine clear day. To-day, however, the rain has been continuous and heavy. Planting is continuing. *Plant Diseases.*—A little rot about which will disappear with the handling. Supplies in some cases are getting leaf-disease badly. It has been a light year as regards borer. *Public Health.*—Fever, coughs and bowel complaints prevalent. *Labour.*—Sufficient. *Interesting Items.*—Volunteer team going down to S. I. R. A. Meeting and Rifle Meeting to be held at Polli Betta range first week of October next.

POLLI BETTA, 27th July.—*Weather.*—A capital monsoon for planting. Light rain daily for the last ten days with sunshine off and on. *Crops.*—With a few exceptions these will after all pro-

bably turn out better than last year. Prices of grain going up steadily. Gram, 9/- per 100 seers; rice, 9 seers per rupee; ragi, 18 seers per rupee. We have almost reached famine prices. *Plant-diseases*.—Not much to complain of, and there would be probably less leaf disease in October-November if more attention was given to systematic draining. *General Health*.—Better than this time last year. Fever and ague in a few cases, but general health good. *Labour*.—Sufficient. Not many Canarese; West Coast abundant. Tamils coming in. The Calicut-Cannanore Railway may attract labour from us during the next two years. *Interesting Items*.—Short crops are bringing out general proprietors in the autumn to see what's up!

Nellampathy, British.

28th July.—*Weather*.—Rain for week 4·68, to date 60·38. Sunday and Monday gave promise of a very bright break as

the sun was out strong and made folks sorry for Saturday's planting, but rain set in on Tuesday morning again with a vengeance and is at it again to-day. Monsoon has been very light, however, to date, and although it is glorious for planting operations, meantime we may feel the effects of it later on in many ways. *Plant-diseases*.—Leaf-disease is very, very bad in some places and is working in nurseries too. If the shortness of crops through leaf-disease theory is the correct one, next year ought to be another black year for this district. *General Health*.—Fair. *Labour*.—Moplas not available yet. The cholera has scared them very much, and I hear Tamils at the other end of the district are afraid to come here. *Interesting Items*.—The many congratulatory telegrams that have (or ought to have!) come to the district on our recognition by the Cochin people are surprising! Alas, it's all a mistake. The bridges *have* been repaired it's true, but not for the reason we fondly imagined. No no, it's *only* the Cochin Rajah coming up to shoot in the tail end of the year, and the parts of the road he will go by are being put to rights. I have been elected Honorary Secretary of an Association "for the better providing of sport for our respected Rajah and his suite." My programme, which has not been sanctioned yet however, and it may be premature for me to divulge it, is to kidnap him on his arrival and after putting the palanquin out of sight make him *walk* all over his road, when I humbly submit he won't want much more "sport" for a few years at least. It was suggested by the Honorary President that a horse be provided, but that was over-ruled as it was thought the excitement of crossing the bridges would be too much for one who did not usually risk his life in such foolhardy procedures, and it was thought that that might be reserved for a future occasion if he had not enough sport on this. This met with some opposition as some seemed to think he would have had all the "sport" he could desire *this* time and might never come again, so why not do this thing in style. Sambur are being shot for presentation.

GENERAL NOTES AND ARTICLES.

THE DIFFUSION OF PLANTING KNOWLEDGE.

IN one of our Trans-atlantic exchanges there lately appeared some excellent remarks on the extreme value of recorded practical experience, a value far in excess of the most fascinating of laboratory theory. For what is the value of knowledge except it be practically applied? The discoveries of the greatest *savant* that ever lived are of no avail unless they are turned to the use of man at the bedside, in field or factory, to heal his ailments, or to minister to his wants. In the words of our contemporary, "Every scientific discovery must be hall-marked with the royal

stamp of 'utility' before it can be passed as current among the workers of the world." Mankind want the simple truth in simple language, so that he who may read. Journalism has done more to disseminate useful knowledge amongst mankind than any other agency. It is impossible to take up the most ordinary periodical without finding some useful fact presented in plain ordinary language, fit for use at sight. Science exists for workers; all scientific work is valueless until it has been approved by them. Moreover every addition to truth, whether made by the labourer in the field, by the farmer, the scientist, professor or wayfarer, so long as it is absolute truth and can be so marked, belongs to the category of science: its value will depend entirely on the results of observation and experience.

In all scientific matters which relate to agriculture, the planter or the farmer is the ultimate judge and referee, just as much as the physician or the surgeon in his own domain. Actual experience is absolutely the only criterion open to the planter as to the doctor. But without doubt, how could the doctor gain his experience, how could he verify that experience without the advantage of medical journals in which diverse opinions are expressed by other workers in the same fields? Neither as our contemporary, the '*Barbadoes Agricultural Gazette*' ably puts it, can planters or farmers arrive at safe conclusions without the aid of journals in which are expressed freely and openly the views and opinions of their fellow-workers. "Journals—medical, agricultural, scientific or other—value the merely *scientific* at its face value just as men do paper currency—it may be worthless or it may equal gold—they prize, welcome and store-up approved and tested knowledge—real science—absolute truth. To preserve truth free it from the mass of rubbish in which it too often is concealed, to present it "fair and untarnished to the eyes of men," is the noble work of journalism—its true province: and let it not be forgotten that truth is equally valuable whether found at the bedside of the pauper or the sovereign, in the field or the laboratory, by the humble labourer with hoe and hand, or the degreed professor with his costly appliances. Journals therefore which represent any very great field of labour cannot be restricted so as to represent only a department of that labour,—to be really useful their work must be whole, entire, representative, and this it can never be confined to the 'departmental'; it must give voice to the work, and if devoted to agriculture, its pages should be filled with observations from field as well as from laboratory, and it will be found that, no matter how humbly expressed, the former will almost invariably outweigh the latter in practical value. Planters are too reticent, frightened by scientific bugbears, these graduates of Nature's university, because they have not the art and knack of the schools, are afraid to record their priceless observations; hence it is that much valuable experience which ought to be recorded in the pages of this journal is annually lost to us, buried with the observers who gathered it. "Planters are afraid of criticism: they dread these studies of Nature, lest some scientific sledge-hammer smash their poor little observation all to bits: they are deterred by the boggy, and forget that great truths have been discovered by unlearned men, and that truth itself is immortal, even when clothed in the humblest garb that the unlearned tongue can weave."

"A journal, especially a medical or agricultural journal, only exists as a storehouse of thought and observation—its object the truth, and this noble purpose can never be fulfilled, unless its pages are open to all who have something to bring. Muzzle it, restrict it to the few, banish from it opinions, views, controversies on matters of public interest that lie within its province, and it is a dead thing; however valuable as a special report, it is valueless as a journal."

Ceylon and the Anamalais.

From the *Ceylon Observer* we note that a Syndicate made up of prominent Ceylon planters has already secured a block of 2,000 acres on the Anamalai Hills. This Syndicate includes Mr. J. N. Campbell (Chairman of the Ceylon Planters' Association), Messrs. Norman Grieve, N. Rowsell, E. Hamlin, W. A. Mooyart-Denison and D. Edwards and Dr. Renny, all well-known men of great and varied experience. We heartily welcome this influx of energy and capital, and trust that it will be merely the prelude to a stronger flow year by year. Our contemporary points out the distinct advantages that South India possesses over such comparatively distant places as Java and Sumatra, where so much Ceylon capital is now being invested.

Rubber plantations.

In a report to the Foreign Office, Sir Henry Deering, the British Minister in Mexico, stated that the total expense for five years' cultivation of a rubber plantation of one hundred thousand trees would not exceed £2,500. The yield from the first harvest would be, say, £12,000, besides the profits from the interplanting of corn, cacao, bananas, &c. The net profits of the investment, after taking the entire cost of the last and all expenses up to the first year of harvest, would be £9,500. Each succeeding harvest for the next 25 or 30 years would bring in a steady income of £10,000. Something like 400 per cent. per annum profit on the investment! It is computed that an eight-year old tree ready for tapping will give about three pounds of rubber, fetching readily 2s. per pound.

Cocoa in Trinidad and Ceylon.

With a view to the possible introduction on a large scale of this staple, it is interesting to note the comparative cost of production in Trinidad and Ceylon. In the former colony it varies from £1-6-0 to £3-18-10 per bag of 165lbs., according to the crop, which again varies from ½ bag per acre to over 3 bags. This runs out to a little over £1-3-0 per cwt., but the prices in London are distinctly lower than for Ceylon cacao, while the average yield does not run much above 2 cwt. per acre. In Ceylon the cost f.o.b. varies from £1-10s. per cwt. for a 2 cwt. crop, to £1-6 for 3 cwt., and £1-3 per 4 cwt. crop. The highest yield recorded in Ceylon, says the *Observer*, is 7 cwt. per acre off an unmanured 21 acre field. Net prices in London again vary a great deal, but 55s. per cwt. seems a fair average.

Bee-keeping in India.

A correspondent asks for information on the possibilities of hiving the jungle bee. In January last we published details of a system adopted with some success by a Nilgiri planter, from which we extract the following. First the hives. Ordinary large clay chatties, with mouth turned down, and

a small hole in the side, make good hives. But they must be protected from the sun, or the combs will be melted. Place in an unfrequented spot, sheltered from wind and, if possible, with a southern aspect. Wooden hives are also good, but should have an angular depression in the roof to accommodate the honey formation always more abundant at the top of the combs. The hives ready, keep a look out for the wandering bees, sent out to look for quarters. These have a habit of searching everything and everywhere, following persons about, &c., and can be captured with ease. Put in the hive and keep them a short time shut up, then liberate. They will go home and bring others with them and finally the whole swarm will take up their quarters. It is often sufficient to place the hives in good positions and let the bees find them out for themselves. The yield from a good hive, where there is abundance of flowers, will be as much as 8 quarts in the year, being 2 at each clearing.

We shall be glad to afford further information if desired.

Salt in agriculture.

In discussing the value of salt to the planting industry, Mr. Cochran, Town Analyst, Colombo, thus summarises the opinions of leading agricultural experts at home:—

The question as to the value of common salt as a manure has always been a disputed one: men like Liebig, Lawes, Warrington, and Voelcker declaring against it; although Dr. Voelcker (according to Dr. Griffiths) latterly recognized its value as a manure which increased the yield of wheat, barley and oat crops. There is no doubt that in special cases salt is of use as a manure. Thus Dr. A. B. Griffiths states that from his own experiments and experience, a dressing of 1½ cwt. nitrate of soda, and 1½ cwt. salt per acre, forms an excellent manure for mangold-wurzel. From the evidence before us, I am disposed to consider the cocoanut tree as one of the special cases in which salt is useful as a manure.

Dr. Griffiths sums up the general properties of common salt from an agricultural point of view as follows:—

(a) The property of salt, in small quantities, in promoting the decomposition of the animal and vegetable matters contained in all cultivated soils is considerable.

(b) It acts as a *direct plant food* in small proportions.

(c) It has the power of destroying noxious insects, slugs and weeds, when applied to fallows.

(d) Salt possesses stimulating powers on growing plants.

(e) It has the power of preserving the juices of plants, and the soils in which they grow from the effects of sudden transitions in the temperature of the atmosphere (C. N. Johnson, F.R.S.)

(f) "It increases the power of certain soils of absorbing moisture from the atmosphere."

I may mention, in conclusion, that according to the same author, salt has been used as a manure in Palestine and in China for more than 2,000 years.

Vanilla.

This vine is grown in many tropical countries, especially in South America, where from the port of Tunham, South East Mexico, is exported more vanilla than from any other port in the world. Bourbon, the Mauritius and the Seychelles also furnish appreciable supplies. In Mexico are found four varieties,—the *Mansa*, *V. plumifolia*, *V. sylvistius*, *V. hortina* and the *Pompura*, *V. rotundifolia*. The *mansa* and the *plumpura* are cultivated. The cinnamon or wild vanilla has a more pointed leaf and a thinner vine than the *mansa*; the pod is shorter, rounder and thinner. They are less than six inches long, divided into three qualities, like the best vanilla, and are called vanillons in France.

The most suitable soil is a rich sandy loam, or vegetable mould, not too dry. They should be planted by small trees

grown for the purpose of giving them support. The temperature should have a mean of about 85 deg. F., never very cold or very hot, altitude (in Mexico) up to 1,000 feet. It is supposed to bear a full crop the third year, from 10-12 oz. of first class beans, 10 to 16 oz. second class, and 12 to 15 oz. third class; weight after curing. Fine vanilla fetches 26s. to 32s. per pound. The best pods are 7 to 9 inches long. The second quality are of the same size but less fine. The third consists of burst open pods, of pods with the ends broken, are red and dry, or undeveloped. In Mexico it fetches from 50 to 75 dollars per thousand in New York, which leaves a handsome margin for profit. The artificial substitute, vanillin or vanillon, has not affected the sale of vanilla, as it lacks the true flavour. After gathering the beans, they are plunged into almost boiling water, then put out on mats to dry, then dried in the sun on blankets. At night they are rolled up in blankets and shut up in tight boxes to ferment. After sizing and classification, they are tied up in bundles of one pound weight, and wrapped in brittening paper and tinfoil.

Weeds.

Weeds may be regarded in two lights: as competitors for the crop food, and as Nature's bankers. The difficulty is to decide under which head to class them at the different seasons of the year. For if we set to work to destroy them in our plantations when they are banking up surplus stores of food that otherwise would be wasted, we act wrongly. We also commit as serious a mistake in allowing them full possession when our coffee or tea wants every particle of sustenance it can obtain. In monsoon time weeds flourish luxuriantly: is there any necessity to do more than keep them in check at this time? Do they not rather store up in their tissues those precious manurial constituents we have been at such pains and expense to put into the soil, and which otherwise would be washed away by the too generous rains? But in the dry season, when every drop of moisture is needed for the crop, which otherwise can make no use of the food at its roots, then is the time to pursue the undergrowth to its death.

The weeds whose luxuriant monsoon growth appalled us die down, and if dug into the soil adds to the store of valuable humus and plant food. The life of the soil, the bacteria, cannot live without humus. Surely it is a matter for earnest consideration that our tiny but important allies should never be starved. Observe the ways of Nature. Which is the richest soil: on land bare of vegetation, or that simply reeling with plant life? Consider the growth of fertility in its different stages. How the hardy lichen and moss attack the hardest rocks, giving lodging to ferns, then to hardy weeds and brushwood, and lastly to trees. What does it prove, but that the digestive or root-solvent powers of some plants are infinitely stronger than others? That minerals utterly useless to, say, coffee or tea, can be seized upon by hardy weeds, pioneers of fertility, which in their decay render up in soluble plant food, the stores in their tissues wrenched from the inhospitable soil. Again, the deep roots of weeds, on their decay, shrink very considerably, and afford channels into which the rain can safely enter and percolate to the raw subsoil. This it attacks with its carbonic acid, breaking up the insoluble mineral compounds. There too does the oxygen of the air freely penetrate, that oxygen without which no root-growth is possible, the life gas that the nitrefying bacteria must have or die.

Artificial manures.

As we have very frequently pointed out, the ignorance among the largest buyers of artificial manures as to the most economical manner of purchasing is stupendous. It cannot too strongly insisted on that the *chief value* of poonacs, manure, etc., depends on the amount respectively contained of nitrogen and phosphoric acid. All respectable dealers readily furnish analyses of their manures where required, and it is an exceedingly easy matter to calculate the comparative value of their respective manures. The following serve as an illustration:—

Abbott & Co. sell poonac containing 5% nitrogen Rs.55 per ton, delivered at a given railway station.

Barclay & Co. sell poonac containing 6% nitrogen Rs.60 per ton, delivered at the same station.

The cartage, we will suppose, comes to Rs.15 per ton each case; thus the 5% poonac = Rs.70 per ton on estate, and the 6% poonac Rs.75 per ton.

Multiply the nitrogen percentage by 22.4 = number pounds nitrogen per ton. Divide the result into the cost per ton, and the result gives the price per pound of nitrogen. The apparently cheaper 5% poonac, therefore, costs about 10 annas per pound of nitrogen and the seemingly more expensive 6% poonac under 9 annas per pound of nitrogen—a difference of 10 per cent. ! In many places the cost of cartage is a great deal higher than Rs.15 per ton, and it is clear that for every rupee extra for carriage, the relative difference is increased. When we hear of estates purchasing 20,000 rupees' worth of artificials in the season, the percentage mentioned works out to a goodly sum indeed.

As it is very rare indeed, we believe, for poonacs to run above 5½ to 6 per cent. of nitrogen, it is evident that an artificial manure containing 9 per cent. of this element, and selling at only a small increase in price, is one to be not only *desired* but *bought*. Such a manure is to be found in a certain fish guano sold by one of the West Coast Manure Factories, who scarcely need our recommendation as to merits, as the demand is far in excess of their supply. Another point to be noticed in connection with the purchase of a good fish manure is the fact of its containing an appreciable percentage of phosphoric acid, which otherwise must be purchased in the form of bones. For coffee, of course, additional phosphates *must* be obtained, but for tea, the guano product and simple seems exactly the thing required.

THE Report of the Directors of the East-Indian and Anglo-Indian Deposit and Loan Society, Limited, to be delivered at the Twentieth Ordinary General Meeting of Shareholders on Thursday, the 22nd July 1897, says that the Deposit Account has further increased to Rupees 4,17,074-8-8 from Rupees 3,54,429-12-6 in the preceding half-year. The loans on Mortgages of House Property and Jewels have also increased to Rs.3,94,141-6-0 from Rs.3,48,824-15-0. Personal Loans to Rs.20,746-7-4 from Rs.19,044-11-4. The income derived by the Society during the half-year amounted to Rs.18,557-9-0 and the expenditure (inclusive of interest due and paid to Depositors) to Rs.14,968, leaving a surplus of Rs.3,589-9-0. This result is so satisfactory as to enable the Directors to recommend a special bonus of 2% on the paid up Capital in addition to the 8½% hitherto declared in each half-year. The above surplus of Rs.3,589-9-0 has therefore been applied as follows:—For Bad debts Rs.400; for Reserve Fund Rs.800; for Dividend Equalization Fund Rs.289-9-0; leaving a balance of Rs.2,100 representing 10½% on the paid up Capital for the half-year for Dividend and Bonus to Shareholders and for Directors' fees.

COMMERCIAL NOTES.

MR. W. F. RABAN presided at the Annual Meeting of the British Darjeeling Tea Company, Limited. He said that the Company had been singularly unfortunate in its starting. In the first place, owing to the exchange, when remitting their purchase money to Calcutta, they lost over Rs.30,000; then, owing to the illness and unfortunate death of Mr. Lloyd, they were involved in costly litigation, and the gardens and machinery were neglected; and when their present manager (Mr. Sproull) took over the charge, he found the labour disorganised, cultivation neglected, and the machinery very much out of repair. Their affairs had now been put on a very different footing. Until more of their young tea came into bearing, the cost per pound would continue high, but he honestly believed that when all their present cultivation came into bearing, they would have one of the finest properties for its size in Darjeeling. This year they would probably work at a loss, but in 1898 he thought they ought to pay their expenses.

THE season's operations of the Jorehaut Tea Company, Limited, have resulted in a gross profit of £21,969 and the net profit to £18,522. There was brought forward from the profit and loss account, 1895, the sum of £4,432, and adding this to the profit on the year 1896, the sum available for dividend is £22,955 7s. 5d. The Directors recommend a dividend at the rate of 20 per cent., payable on 1st July, and that the balance of £2,955 be carried forward. The reserve fund of undivided profits amounts to £21,579.

U. P. A. S. I. LEAVES.

[GATHERED BY THE SECRETARY, U. P. A. S. I.]

It appears that a slight alteration will be necessary in the Agenda paper already issued. "Coffee-stealing" is entered therein as a sub-head to the Report of the S. I. P. E. C., but one of the delegates has intimated that he has a resolution to put forward on a point that has no reference to this report. Coffee-stealing will, therefore, be entered as a distinct subject.

District Associations should take particular note of the fact that the chief subject for discussion at the U. P. A. Committee meeting on 7th August is the Report of the South of India Planters' Enquiry Committee.

The following are the subscriptions to the Reserve Fund of which payment had been made to the Secretary of the U. P. A. S. I. on and before the 27th instant:—

	RS.	A.	RS.	A.
North Mysore P. A., temporary annual subscription...	625	0		
O. Scot-Skirving's subscription	100	0		
			725	0
Nilgiri P. A.			1,239	0
Lower Pulneys P. A.			85	0
Nelliampathis P. A.—				
J. C. Abbott	50	0		
H. M. Hall	25	0		
C. Hall	25	0		
W. A. Gilbert	10	0		
P. W. E. Watts	25	0		
A. Barnes	5	0		
			140	0
Wynaad P. A.	403	12		
J. W. Hockin	100	0		

	RS.	A.	RS.	A.
Parry & Co., Madras	300	0		
W. H. Sprott	256	8		
			1,060	4
South Mysore P. A.			1,040	0
Shevaroy P. A.			781	0
Central Travancore P. A.—				
G. L. Acworth	200	0		
H. W. Baker	200	0		
H. J. Blandford	20	0		
S. M. Dighton	50	0		
R. H. Goldie	50	0		
R. S. Imray	200	0		
H. M. Knight	200	0		
G. Lance	20	0		
N. Macgowan	20	0		
A. E. Veale	25	0		
Hon. V. B. Wilbraham	200	0		
Glenmary Estate (per B. Lawrie)	100	0		
Kuduwa Karnum Estate (per C. H. Williams)	100	0		
			1,385	0
Coorg P. A.			1,866	0
Kanan Devan P. A.			524	8
C. G. Lechler			10	0
Aspinwall & Co., Cochin			150	0
Morgan & Son, Mangalore			300	0
Wilson & Co., Madras			50	0
Binny & Co., "			300	0
Arbuthnot & Co., ;			300	0
E. M. Ewart, Shencotta			50	0
			Total Rs.	9,955 12

LETTERS TO THE EDITOR.

NOTICE TO CORRESPONDENTS.

["Cotton, Bangalore."—You might send us some working details of your enterprise, upon which some opinion could be formed. "One Interested."—Will appear in our next issue.—Ed.]

BREAD-MAKING: A QUERY.

SIR,—Can you or any of your many readers kindly give me a receipt for making good bread at home? I can get toddy.
ROTI.

THE LOWER PULNEYS PLANTERS' ASSOCIATION, DINDIGUL.

SIR,—The Annual General Meeting of the above Association will be held in Dindigul, but has been postponed till September. Notices will issue later.

21st July 1897.

HOWARD NEWPORT,
Honorary Secretary.

THE WRIGHT FUND.

DEAR SIR,—In continuation of the List of Subscriptions published by you, for the benefit of the family of the late Adolphus Wright, I have received Rs.20 from J. T. Murray, of Kotagiri, and Rs.15 from H. E. Lee, of Kadur, Mysore.

I am, Yours faithfully,

OOTY, 24th July 1897.

J. W. MINCHIN.

BLACK BUG.

SIR,—If "Death to Bugs" in your valuable journal of 17th current will address N. E. A., Bangalore Cantonment, giving full particulars of the pest, the same will be glad to send him a few packets of a remedy he has tried for insect kind, and would be glad to have his report on the same.

BUGS.

BEE-KEEPING IN INDIA AND ERYTHRINA LITHOSPERMA.

SIR,—Can you kindly give me any information, through the medium of your valuable paper, as to bee-keeping in India? Is it possible to hire or domesticate the Indian bee, or is

it feasible to procure bees in quantities which could be hired or domesticated at a reasonable cost? Can you, also, tell me whether the *Erythrina Lithosperma* is a good shade tree for coffee in spite of the undoubted excellent analysis of its loppings, or whether the tree itself is a surface feeder, and apt to take more than its share of goodness out of the land, or perhaps it may be that its foliage is on the tree at the wrong season of the year?

[Your queries are noticed elsewhere.—Ed.]

ENQUIRER.

ARROWROOT: A QUERY.

DEAR SIR,—Can you tell me anything about arrowroot and where to get it? I wish to plant two acres or so and wish to know how much I will require.

From Calcutta I was disappointed, as they say they don't grow it that side; your many correspondents may be able to furnish me with the information as regards planting, and the season when to plant, &c.

Any book on the subject if suggested will greatly oblige.

SAIFABAD, HYDERABAD, DECCAN,

Yours truly,

22nd July 1897.

MIZA MEHDY KHAN.

[We believe that in the excellent series of planting books published by the *Ceylon Observer* Press, Colombo, will be found a volume dealing with the cultivation of arrowroot.—Ed.]

THE JUNGLE LEECH AND HIS HABITS.

SIR,—Can any of your more learned readers tell me all about the common or jungle leech, I wonder? It seems to me rather extraordinary that about a thing we meet with daily almost so little is known by planters. Ask fifty men the question. Does a leech see, or is it by scent it knows of the approach of a victim? Where does it go to in the hot weather? How is it brought into the world. By egg or otherwise? Seeing there are so many leeches to be found in jungles where the supply of coolies does not equal the demand (in the opinion of the little brutes) and where there is little or no game to be found, what do they live on? Ask, I say, fifty men these and other questions, and I doubt if you will find two that can answer this satisfactorily. So if some student of Natural History will enlighten my ignorance, he will be doing the same kind office for many others I think.

"INTERESTED."

A WONDERFUL POOCHIE.

DEAR SIR,—I enclose a cutting from a home paper which, if true, it seems funny is never heard anything about in South India; but, perhaps, we have no tea worms here. I should have thought that in any case the making of the tea would have killed the insect. What say the tea men? [Gammon.—Ed.]

COFFEE.

TEA THAT MAKES YOU THIN.

EVERYBODY knows that tea when drunk in hot weather makes a person perspire. You have no cause for fear as long as you keep to drinking tea as procured in England; but if you don't want to waste away to a shadow, don't have anything to do with tea as they drink it in Ceylon.

The tea-plants of Ceylon are infested with an insect known as the tea-worm. This is a most minute creature, visible only through a powerful microscope. The leaves of the tea-plant are covered with them, and you probably get a few thousands of the creatures in a pound of tea; but they are quite harmless as received by us. In Ceylon, however, the tea is used soon after it is picked, and the insects, being then alive, have a peculiar effect on persons drinking the tea.

As soon as you have drunk a cup of this tea you will begin to perspire freely, the pores of the skin remaining open till the clothes are saturated through and through. The effect is so weakening that persons have been prostrated after only a few cupfuls. These, of course, were Europeans, the natives' constitutions being proof against it.

COST OF LIVING ON A PLANTATION.

SIR,—I join hands with "Yah" and "Van Read" on the subject "Cost" of living on a "plantation," and say a word to "On the

Cheap" and "Ex-Creeper" which I hope will not hurt their feelings, but teach them to be more philanthropic. If the writer independent gentlemen, which I presume they are, the more reason I say for them to keep such knowledge to themselves and study it for their own welfare; but where it is a matter of one serving another, I hardly think such ideas if carried would be charming.

Some are dirty enough to keep from washing for days, aside the use of soap, which is cheap enough now, sure goodness, but all men are not alike, and a good job too. Some live upon "ragi" as the poor native, but all cannot, and some of us who have been reduced in pecuniary circumstances to our coat to the cloth we have, but no well-bred man with means the back of him would draw the line I'm sure. To certain knowledge I have known men not to use soap for months, and as for food they would turn one joint into different forms in as many days; then guess its condition but we are all not alike I say. Now to the point, and would "not" be out of place either for me to suggest to "On Cheap" and "Ex-Creeper" to resort to the form once practised as to how little a horse could live upon, and when he brought himself to the last straw write us again.

AD RE

LEAF DISEASE AND NITRATE OF SODA.

SIR,—In your issue of 26th June, EXPD. DT. (I write signature as you print it) relates some experiences with nitrate of soda. It was not my intention to publish mine this year, but the result of two or three trials cannot be considered conclusive, but in case it should help others, I may as well confirm your correspondent as far as possible. I have twice applied nitrate in the hot weather and the permanent result has been nil. In October I applied 2 oz. to a field which had a very severe attack (as it has had for years every September-October) and was away for a fortnight; on my return, while a neighbouring field had got more, this field did not show a trace of disease nor has it since; the leaves attacked had all fallen off and there was a flush of young wood; it was too late to crop this year as it produced which makes me think that the following would be a better plan. Apply 1 oz. per tree in early September and then go round the open spaces (which will always be the better for being prevented from premature hardening and consequent probable loss of fruit, especially early bud) and the E. facings and other notorious spots in early October, with another 1 oz. This of course must be modified by local experience. Some estates harden early, some late, this place is very late, being surrounded by parky lands. I have seen many seasons with practically no wintering, and therefore a late flush is most undesirable. I did not dig the nitrate in as the field had been previously dug, and I am rather in doubt still as to whether it is necessary to dig it in; some of your correspondents say it is, while a very large user of it once told me that he never did so.

If your correspondents do not care to sign their names, can they at all events mention names of estates? This would be of use to their neighbours and assist them to adopt some conclusions from the result of experiments, as the same results cannot be expected from all soils and situations.

SEAGULLY ESTATE, MUDIGERE,
KADUR DISTRICT, MYSORE,
22nd July, 1897.

JNO. G. HAMILTON

CREEPERS IN CEYLON.

SIR,—Chancing upon the enclosed cutting entitled "The Prospects before Creepers" culled from the *Madras Mail* some time ago, brought to my recollection an article on the same subject, which appeared in P. O., April 3rd, 1897, and in which the following appears: "We only hear of the import (of creepers) but assuredly the export in the form of 'returned empty

must be of imposing dimensions." What a pity no statistics are kept! But I'm inclined to think that there are not so many as one would be led to suppose. Are creepers of a few months, even years not found in charge of every petty estate, of a few acres, formerly on which a native writer would have been employed, on a miserable salary of anything from 50 to 80 rupees?

The "Creeper trade" is a paying one, and I know of men who when in England paint glowing accounts of the life of a Coffee Planter, to would-be creepers, with the result that a haul is made. With what result it is hardly necessary to mention. The greed of a few is the ruin of many. What is the reason for the low salaries of *well qualified* superintendents now-a-days. I think we have not far to look for an answer, after having perused "The prospects before creepers"—a glutted market. In my humble opinion, we superintendents ought to combine, and in some way (by collecting statistics of the returned empties?) disillusionize those parents and guardians who believe that a creepership is an easy road to fortune.

SUPERINTENDENT.

THE PROSPECTS BEFORE "CREEPERS."—"Observer" writes:—I have heard it contended that in getting out young men, who pay long premiums, and £10 to £12-10s. stg. per mensem, for board which may cost Rs.60, the favour is conferred by those in this import trade. I think the following advertisements culled from last week's papers are conclusive of the opposite:—1st. A Company paying 25 and 30 per cent. dividends advertise for an assistant on Rs.100 per mensem. Supply so exceeds demand that business men are not ashamed to offer such a pittance; yet the last holder of the post lost *his health* and his predecessor *his life* in the service. 2nd. Another billet is offered, in the same feverish district, with the noble salary of Rs.70 per mensem. 3rd. Wanted an *experienced* European assistant, salary Rs.100 per mensem. [So that after gaining experience £5 10s. is what a "Creeper" may expect—one quarter of what he pays monthly for premium and board!] 4. "Wanted an experienced assistant, salary Rs.150 per mensem. *No creeper need apply.*" 5. There is a well-authenticated report current that thirty-seven creepers applied for one small billet lately, and 6. I know that over a hundred Ceylon men applied for a billet with a small salary in another Colony. I think your Overland issue should contain this, with the request that all home papers should copy and warn parents against creeper trappers who are becoming more and more numerous—the notorious success of a few stimulating the greed of many.—O.

COFFEE PLANTERS AND THEIR CURERS

SIR,—It is not always that the Coast firms meet with one so considerate, or appreciative of their work as "Kola," whose letter appears in *Planting Opinion* of 3rd July. Matters, however, have, I think, been pretty well threshed out between the planter and curer, and it is probably only in instances where abnormal shortcomings occur that any complaint is made.

As to the measurement of coffee, it has been from time immemorial a fruitful source of contention. But let the work be as carefully done as it practically can be, and you will seldom get the same lot of parchment to measure twice alike. I have seen the process gone through frequently, and invariably some difference was the result. On this account it is only right that some allowance should be made. I have, however, known the curer blamed for letting the cartmen off when the shortfall was small, and in other cases where the value of the shortage was kept off the cartmen, one planter saying the fellow must have stolen it, and besides it encourages him to pilfer on the chance of his getting off, the other complaining because in making the men pay it interferes with his getting cartmen to take his coffee. In the latter case, to avoid such contingency it was generally arranged that the planter could pay the cartmen the sums deducted if disposed to do so. But one can see how complaints like these may bear somewhat hard on the curer.

As to the shrinkage of coffee and loss of weight in drying, these of course must vary, according to the degree of moisture when received into the curing yard will be the time required for drying. If three days are required, the parchment from the longer manipulation it undergoes in spreading, turning gather-

ing in at night, &c., gets more broken than if dried only for two days. Dissatisfaction is avoided, I think, by a plan I have seen adopted, that is by taking the weight of a bushel (several being tried for average) when the coffee arrives and again when fully dried. If the planter gets these figures, it should satisfy him as to weight lost in dryage. If proper records are kept in curing establishments they should also show the total number of bushels after drying each lot, and the curer should also be able to produce test trials of small quantities to check outturn. Outturns vary of course, the relative bulk and weight of the parchment to the solid bean being a variable element.

Kola's lowest record outturn of 79 Bus. to the ton looks, I should say, suspicious, unless there was anything unusual to explain it. The fine Mysore coffee from old chick plants, almost perfectly dried on the estate which was at one time the custom in Mysore plantations, not infrequently ran 83 to 84 bushels, on a rare occasion as low as 81; but this was the extreme—95 with which Kola is satisfied seems high for an all-round figure. Good Coorg or Mysore should run about 92 or 93.

His reference to the difference in tonnage scales is interesting. One would think that business men would be the first to feel the inconvenience of such differences, and through the Chambers of Commerce arrange to have them remedied. But I doubt if there be a class more slow in progressive movements of this sort. One would think that uniformity in this and many other similar matters would be such a convenience in facilitating business transactions that every effort would be made to introduce it, but you don't find it so. In connection with this subject there is one which the Combined Planters' Association might well interest itself on, that is to get some uniform system of weights and measures adopted. Every little district has its own weights and measures, and what makes it so annoying and perplexing is that they so often use the same names; for instance, the *maund* is a designation used nearly all over India, but it is the same thing only in name. In one place it is 28 lbs.; in a district not far off it is 24, again 25, at another 33, another 82½!! and so on *ad infinitum*. So with the candy. So with almost every weight or measure you can name. People make a great noise calling for reforms that are of little or no importance. To replace the present barbarous system with a well-arranged scale would be a boon to the whole community, let alone traders. It should be made a burning question, and agitation should not be allowed to rest till the thing is accomplished.

STEAM.

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
16.64	"	Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE.

COFFEE.

Erythrina lithosperma. A planter, just returned from home after a long holiday, asks for information regarding this tree *in re* its utility for shade. The exhaustive correspondence that has appeared in these columns on this very subject, renders us disinclined to go over old ground. Mr. B. Nelson, of Shencottah, Tinnevely, the "father" of this tree, will doubtless be willing to reply to any personal communications addressed him. We may mention, however, that we should be glad to publish results

of the many experiments tried therewith, we believe, in every coffee district of South India.

Foxy coffee.

A gentleman who has had very considerable experience in the curing of coffee writes us thusly: "When I had a great deal to do with the preparation of coffee for the London and Continental Markets, foxy coffee was always a vexed question and generally gave rise to a difference of opinion between the curer and the planter. I thought it was generally the result of fermentation during preparation on the estate, though possibly when coffee reached the coast very wet and could not at once be dried, it might suffer. But often we never knew of coffee being foxy till so reported by the brokers at home. Curers are generally too busy when coffee is arriving for the close experimenting that is required to determine how foxiness occurs. Fermentation was a doubtful cause, for in many cases everyone connected with the preparation denied its suffering in that way when in their hands. I have always thought that coffee is judged too much by colour. Some of the finest coffees, Cannon's Mysore and similar high-class qualities, if judged of by colour alone, would not have been graded very high. The French, good connoisseurs, liked their Indian coffee to be of a straw colour. They preferred native-grown kinds, which before they reached the market after a long sea-voyage round the Cape had generally acquired this tint. In fact this being the usual condition in which it arrived was made the market criterion of its quality. With coffee now going by the short route, the colour had not so much changed, but until I left the coast (about 12 years ago.—Ed.) many orders required it should be sent round the Cape. I don't know how it is now.

Disease-resisting varieties of coffee.

Scientific investigation into the respective disease-resisting powers of different varieties of the same

plants has already been rewarded in the well-known cases of the vine, apple, potatoe and wheat. Similarly among the many varieties and hybrids of coffee there must surely exist, were diligent search only made, numerous hardy specimens on our plantations, immune or practically immune from the attacks of our great enemy, leaf disease. We have noticed with great regret that the general feeling of planters, as expressed in the resolutions of their District Associations, with the honorable exception of the Nilgiri P. A., is against any scientific investigation into the cause or prevention of *Hemeleia vastatrix*. Surely it was ever one of the proudest boasts of our nation that we never know when we are beaten, and out of defeat snatch our most glorious victories. Because practical planters, all untrained in the highly scientific methods of scientific investigation, are helpless of themselves to combat their enemy, is that a reason for declaring that their case is hopeless? When the dreaded phylloxera almost decimated the vineyards of France, did they not set to work and successfully replant their fields with hardy American stock? Was not the silk industry in Southern Europe threatened with extinction until Pasteur, by his discovery of the life-history of the disease, showed the sericulturists how to resist the plague that threatened to overwhelm them? Does not the planter himself, when a valuable horse is sick, do his best to obtain the advice and help of a horse-doctor, a veterinary

surgeon? The assertion that, because we planters lamentably failed in our endeavours to cope with disease, therefore there is no help possible, argues a in ourselves that approaches arrogant self-conceit. have tried, we have failed; therefore everyone else must. Much in the same manner would a village doctor de that because he had failed to cure a mysterious disease, assistance of the best London physician would be r useless. To put the same thing in a different way there are doctors who devote themselves to the curi human and animal ailments, so are there, "doctors" devote themselves to curing the diseases of plants. we, who anxiously call in the aid of the doctor veterinary surgeon when our friends and horses are deliberately refuse to avail ourselves of the service "plant-doctors" when coffee, the plant by which we is attacked by a disease that paralyses its vital act nearly to the point of death? Such wisdom is s admirable, though to the scoffer it seems folly. Wh such attempts have failed in Ceylon, a country w climate is eminently favourable to the well-being of fungus; we have proved in South India that we are favoured by nature.

Some statistics.

I.—The following statement shows the total crop in Rio and Santos during the last fifteen years, commencing July 1 and ending June 30:—

	Rio Bags.	Santos. Bags.	Total. Bags.
1896-97 ...	3,552,000	5,103,000	8,655,000
1895-96 ...	2,399,000	3,081,000	5,480,000
1894-95 ...	2,712,000	3,987,000	6,699,000
1893-94 ...	2,588,000	1,702,000	4,290,000
1892-93 ...	2,980,000	3,213,000	6,193,000
1891-92 ...	3,722,000	3,664,000	7,386,000
1890-91 ...	2,395,000	2,913,000	5,308,000
1889-90 ...	2,351,000	1,869,000	4,220,000
1888-89 ...	4,124,000	2,611,000	6,735,000
1887-88 ...	1,921,784	1,120,043	3,041,827
1886-87 ...	3,500,234	2,587,912	6,088,146
1885-86 ...	3,887,618	1,668,965	5,556,583
1884-85 ...	4,117,116	2,095,435	6,212,551
1883-84 ...	3,186,696	1,871,584	5,058,280
1882-83 ...	4,742,969	1,967,880	6,710,849

II.—Statistics of Coffee in Holland:—

	1897. Bgs & Cs.	1896. Bgs & Cs.
Deliveries HM in June ...	15,500	18,000
Total 6 months ...	102,500	110,500
Trading Company's Stock of Java on		
June 30, unsold ...	31,000	86,000
Ditto sold ...	37,750	53,500
Java afloat ...	—	—
Private Stocks, all kinds ...	68,750	139,500
Ditto afloat ...	227,550	99,500
	10,000	22,000
Total visible supply ...	306,300	261,000
Ditto May 31, 1897 ...	315,500	271,500
" April 30 ...	332,500	280,000
" March 31 ...	355,500	286,500
" Feb. 28 ...	366,500	311,500
" Jan. 31 ...	324,500	308,000
" Dec. 31, 1896 ...	347,000	305,000
" Nov. 30 ...	317,000	316,000
" Oct. 31 ...	302,000	275,000
" Sept. 30 ...	300,500	259,000
" Aug. 31 ...	252,000	208,000
" July 31 ...	250,000	222,000
" June 30 ...	261,000	195,000

III.—The following Statement gives the quantities of the various kinds of Coffee offered by auction in London during the first six months of the present year:—

	Jan. & Feb.	Mar. & Apr.	May.	June.
	Pkgs.	Pkgs.	Pkgs.	Pkgs.
Ceylon ...	280	275	151	224
East India ...	4,716	30,579	17,032	4,652
Nyasa ...	778	223	—	22
W. C. African...	947	140	570	—
Mocha ...	2,124	1,376	906	41
Abyssinian ...	191	155	86	—
British W. I. ...	3,090	1,785	1,763	916
Costa Rica ...	9,311	77,561	33,511	6,278
Guatemala ...	8,408	25,445	19,860	22,298
Colombian ...	20,368	8,295	4,775	9,143
Brazil ...	11,852	1,915	205	473
Other Foreign...	3,106	5,449	4,137	1,884
Liberian ...	295	937	461	162
Total { Bags.	65,365	153,969	83,359	45,924
{ Casks	201	166	98	169
Total, 1896. { Pgs.	59,335	168,492	60,360	51,683

The total offered during the first six months of the present year amounted to 348,599 bags 634 casks against 339,079 bags 801 casks during the corresponding period in 1896.

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.,
SOMETIME AGRICULTURAL CHEMIST IN COORG, SOUTH INDIA,
TO MESSRS. MATHESON AND CO.)
(Reprinted from the "Madras Mail.")

NOTE.—These papers are being published in pamphlet form: register orders with Messrs. Addison & Co., Mount Road, Madras.

VI. SUPPLIES.

THE future of the coffee-planting industry of Southern India depends on the successful supplying of the vacancies caused by the failure of the coffee trees due to borer, leaf-disease, over-bearing, old age, &c. No matter how healthy a coffee-tree may be, no matter how carefully pruned, handled, tended and nourished, its life will end sooner or later. Under favourable conditions, the tree may live for fifty or sixty years; as a rule, it will seldom last thirty. It will, under favourable conditions, be in full bearing in the fifth or sixth year, and may go on for 20 to 25 years giving paying crops. Many trees are exhausted in 10 to 15 years by unskilful treatment, borer, and attacks of *Hemeleia Vastatrix*, etc., and must make room for a new generation. If the vacancies can be successfully supplied and the plants developed in a healthy and vigorous manner, there is no reason why an estate should be limited as to age. If we can so arrange matters as to have a continual succession of young plants coming on and developing into healthy trees to replace those taken out, a coffee estate may be considered as a permanent investment. In suitable localities efficiently drained and manured this can be done; and an estate may be considered to be working under the best possible conditions of perpetuation where from 4 to 5 per cent. of vacancies occur every year that are successfully supplied. It is upon the success of the supplying that the life of the estate depends, and practical planters consider the question of supplying one of the first importance in Southern India. It is only when supplies cannot be got to grow that there is a necessity to abandon the estate. With many aspects and under some conditions the plants cannot be raised, except at a ruinous cost.

A good deal of land at one time and another has been opened under coffee that was never suitable for it. With such land the cheapest plan is to abandon it at once. Such lands in Coorg are those exposed to the full force of the east wind with a southerly aspect.

Supposing the land to be suitable for coffee, we'll consider some of the more important points connected with supply failures and the successful raising of coffee-plants. To begin with, the seed should be the best procurable, from healthy, strong trees; it should be fully matured, as, judging by analogy, it is impossible to obtain a strong vigorous offspring with under-aged and weakly parents. Heredity plays as important a part with plants as with animals, and amongst cattle-breeders the importance of a good stock to breed from is fully recognised. Experience has shown that good points can be perpetuated to the exclusion of bad ones.

This point has also been recognised in regard to plants; for instance in Sutton's "Pedigree Wheat." All doubtful seed should be rejected, and, if possible, seed from another locality should be planted. Evidence is wanted to decide whether it is better to bring the seed from a dry to a damp climate or *vice versa*. Judging from what I have seen, it seems preferable to move from the damp to the dry. The celebrated Nak Nad variety, with its fine bold bean, is grown in a comparatively moist, cold climate. It has done remarkably well in the Bamboo District, where some of the finest estates are planted with it. The most probable reason why the hotter and dryer Bamboo District has proved favourable to the development of healthy plants from that seed is that in the spring, when the plant appears above ground and when it is put out on the estate, the climate conditions are less favourable to the development of leaf-disease and other fungoid growths there than in the forest or on the ghats. Seed from Venezuela was introduced into Coorg three years ago, and I believe at least one proprietor is exerting himself to bring in seed from Abyssinia. These are steps in the right direction, and will, I hope, lead to the improvement of the Coorg coffee and the coffee industry of Southern India from Coorg seed. Nak Nad variety was some time since introduced into Mysore with great success, and has, I believe, practically replaced the old Chickmagalur. The Nak Nad has a fine bold bean, with large broad leaves, commonly nine inches long by four broad, or almost as large as the Liberian. The Chick seldom has leaves six inches long; they are, as a rule, narrower in proportion than the Nak Nad, and the tree crops in alternate years to a marked extent.

Seed should be selected from another estate, or preferably district. In and in breeding, according to Darwin, leads to the deterioration and extinction of the species.

The arrangement of the nurseries now demands our attention. Preference should be given to a light sandy soil, not too far from water. Where an old soil has to be used, it can be rejuvenated by burning the soil and adding a little cattle manure, or good vegetable mould or jungle soil. If infested with land crabs, the burning generally gets rid of them, or the bed may be sprayed with kerosine oil, or treated with sulphur and lime. Badly drained nurseries are a fruitful source of weakly plants, which result in failures when put out in the field. Keeping plants too wet induces leaf-disease, white mealy bug, &c., and seriously interferes with the health of the supplies; if they are unhealthy in the nursery, good results in the field are not likely to be got.

Steeping the seed in a weak solution of lime water, to which 1 oz. of nitre and 1 oz. of copper sulphate are added per gallon, facilitates germination, and protects them from the attacks of insects. Other substances have been used, but the above is one of the best. Overcrowding the nursery is false economy of the worst description; the plants should be kept at least six inches apart in the beds. One of the reasons why basket plants are more sturdy than those in the beds is that in general they have more room, and the air can be circulated freely round them, which is not the case where plants are closely packed in a bed; the drainage is also better, and the soil seldom sour. In a great many nurseries that I have seen, the sun has been too carefully excluded; this tends to make the plants tender, and stunts the growth, as the leaves do not

perform their functions vigorously in the absence of sunlight. Shade the plants by all means in hot districts, but do not shut out all the sun light.

Light, air, moisture, and soil are necessary to the plants, and they must per force be supplied, or healthy plants cannot be grown. If plants are grown in baskets, they should be raised off the ground six inches to a foot on a grating. The baskets may be dipped in a solution of copper sulphate to preserve them from white ants. When planting out with baskets, it would be advisable to look to the basket bottoms, and if they are in any way sound, cut them off before putting them in the ground. I have known a basket quite sound and whole twelve months after it was put out; needless to say the supply failed. Having a good supply is half the battle, and the success of the future tree mainly depends on it, and the way it is put out in the field. The supply pits are to be made. On virgin land this is not a very important matter, but on old land where vacancies are to be supplied it is. If they are to be made at all, it will be worth while to give a little time and attention to them. Where possible they should be dug in the hot weather, or as soon after crop as possible. Depth is all important; you can widen a hole after a plant is in, but it is very difficult to deepen it. At least eighteen inches should be cut out in depth from the original surface, and two feet would probably be better. The bottom of the hole should be broken up with a pickaxe or fork. Smooth bottoms are a prolific cause of turned top roots and unhealthy trees. If the plants are put out in the baskets or with ball, pits are necessary, and if they are of insufficient depth or have smooth bottoms, no good will result from these expensive methods of planting. If good pits cannot be cut, it is better to open up the ground by inserting a fourteen-inch foot fork and slip the plants in behind it. If care is taken to keep the roots straight, very good results can be got. One planter of experience in South Coorg can point with justifiable pride to a field planted in this way. The effect of old coffee on the growth of supplies is very great, and they require to be kept clear of weeds, and carefully manured to give satisfactory results. The following manure will be found very useful; it is the diffusive manure mentioned in my paper on manuring of coffee:—

- 1 cwt. bone meal.
- 1 „ pure fish.
- 1 „ superphosphates 40 per cent. soluble.
- $\frac{1}{2}$ „ sulphate of ammonia.
- 2 „ kanite 25 per cent. sulphate of potash.

A quarter of a pound of this mixed with 2 lbs. of burnt earth will be sufficient for each supply; or 1 oz. sulphate of ammonia, 2 ozs. superphosphate, and 1 oz. fine bone meal mixed with 4 ozs. wood ashes and 2 lbs. burnt earth will prove more suitable on some places where the supply of nitrogen and sulphur is short.

Cattle manure is not always to be recommended for application to supplies, as it has a great tendency to facilitate the development of white mealy bug and fungoid growths. I know many people will quote instances where it has been used most successfully; but that has not always been the case, and the results got amongst old coffee by using chemical manures have been such as to fully warrant an extension of their use. They do not favour the development of insect and fungoid pests, and can be adjusted to suit the requirements of the plants and soil with the greatest ease.

The effect of shade on the supplies is most marked. Old Atty and Jack trees are fatal, and any shade that is surface feeding or too dense retards the growth or stops it altogether. It is much easier to raise supplies where they are lightly shaded than it is to get them up under it when heavy, as long as they are sheltered from the wind. In sheltered places with a northerly aspect which do not get the afternoon sun, shade is not required, and decidedly checks the growth of supplies.

Where any extensive area of old land has to be supplied, it is advisable to cut out all the old Jack and Atty trees, reduce the shade to a minimum; while mealy bug attack the roots is the cause of quite one-half of the supply failure in South Coorg. Let anyone towards the close of the planting season, or when replanting plants of the season's putting out, carefully examine the roots of the plant that failed, and in all probability find that the bark has been eaten off by the mealy bug; and very possibly he will find the insect adhering to the root. I have seen the tap root of a supply almost devoid of bark, and most of the feeder roots gone. Drainage and clearing are generally effectual in getting rid of the pest, or the ground may be sprayed with bisulphide of carbon emulsion.

In exposed places many plants are windrung and fail from this cause alone; but a board of stick or shingle placed windward side will often save them. On such places, unless the soil is excellent, it is rarely worth while to plant up old land, as the plants have a continual fight for existence. To avoid wind blown ridges, where the soil is poor, swampy places at the edge of the estate, and places where there is only a thin cover of soil over slab rock, and to concentrate the work on good, well saturated land, is the cheapest policy. It is better to have a piece of land under guinea grass or fodder supply than waste labour by continually replanting. These remarks are made chiefly in respect to old estates, where the difficulty of raising supplies are so much greater than on virgin land. To adapt the seed to the soil is of much greater importance on old estates than on those which are just opened. A change of soil is all important when planting up or replanting old land. Where it is brought from districts differing greatly in climate and condition, it may be necessary to acclimatise it before the full benefit of the change is obtained.

TEA.

A useful Book.

We have received for notice in our columns a very useful little book on tea, entitled "Tea Planting from Seed to Crop" by Mr. A. Joseph, formerly of Ceylon. It is in English with a Tamil translation, and contains a great deal of practical information on every branch of tea-planting, the use of writers, tea-makers, &c., &c. The work contains 47 pages, and will shortly be obtainable, at one rupee per copy, from our Madras office.

Japan's efforts.

The 70,000 dollars granted by the Japan Government for the betterment of the tea industry is to be expended almost altogether in advertising and distributing samples in America and Canada. In commenting on this, the *Japan Times* remarks that the far greater importance of improving the tea-manufacture has not received prior attention. For Japanese teas are without doubt well-known throughout the length and breadth of North America, and equally well-known as the now general complaints as to their inferior quality.

SPREAD OF TEA CULTIVATION IN PEERMA.

CONSEQUENT on the reinstitution of Land Sales by the Travancore Government during the last two years, large areas of land are now being felled for tea cultivation. Prior to that time the spread of tea cultivation was limited to a few small clearings annually. The advent of large wealthy companies into the district is largely responsible for the rapid increase now taking place. As everywhere

the private proprietor is gradually being ousted, and I do not think the time is far distant when all Peermaad will be in the hands of companies. The total areas at present under cultivation in the district is, inclusive of this year's earnings, close on 5,500 acres; of this amount nearly 970 acres are under coffee. Of the area under tea 1,500 acres thereabouts are under two years' old. The estimated yield for current year is placed at $1\frac{1}{4}$ million lbs., making the average yield about 400 lbs. per acre.

It is not many years since only two factories in the district possessed machinery, and by no means all of them were efficient. But within the last year or so great changes have taken place in this respect; factories have been enlarged to meet the ever-increasing yield, and machinery is now to be seen in every factory, with one or two exceptions. Owing to the inefficiency of the water-supply during the dry months of the year, and also owing to many factories having been built some distance off water, in the days when machinery for tea manufacture was hardly thought of, if at all, many estates have provided themselves with oil engines. There are at present five of these engines of various makes in the district, and I am told another is to be erected this month. The various makes of these engines are Griffin's Simplex, Hornsby-Akroyd, and Tangye's.

To compare the relative merits of the different engines is impossible without a perfect knowledge of the working of each one. When they are at work I don't think there is much to choose between them. They all seem to go well and give next no trouble at all. In fact an engine-driver can be dispensed with.

The Tangye appears the simplest make, in that it has so few working parts and in the absence of fans and pumps. The Hornsby-Akroyd is also very simple, though it has a few more working parts than the Tangye, but less than Griffin's Simplex.

The cost of oil per lb. of made tea varies with the amount of tea you have to make. The more tea you make, the cheaper it is, for when these engines are working at full power they use very little more oil than when only working at half power. Tangye is the latest engine of this type, and the well-known firm of Davidson and Co. are agents for it. I give below a summary of the working of this engine for the month of May:—

Engine worked 29 days on an average of 4 hrs. 58 m. per diem.

11,013 lbs. tea sifted and 9,908 lbs. of tea manufactured, machines at use being a Brown's Triple Action Roller, Little Giant Roller, Davidson's Large Tea Sorter and Souter's Roll Breaker. Quantity of oil consumed being 14 cases inclusive of oil used for lamps in factory. The cost per lb. of made tea was 1.32 pies. A.

MESSRS. COLLINGWOOD & Co. have opened business on Mount Road Madras, as Pharmacists and Manufacturing Chemists. They inform us that "Small profits and quick returns" will be their motto, and desire us to intimate to planters that they are prepared to issue supplies from newly-imported stock of patent proprietary articles, drugs, soaps, perfumery, surgical and scientific instruments, veterinary preparations, &c., at very reasonable rates. Moreover, in the case of all orders for drugs, &c., for planters that amount to Rs.100 and upward, they will supply free bottles, tins, pots, &c., cases, packing and transit to the railway station here. This seems liberal. We are assured, too, that the pharmacy will be under the control of a qualified Domiciled European Proprietor, and under the constant supervision of qualified and experienced chemists.

THE SIMPLEX OXIDISER.

IN presenting its readers with a capital portrait of Mr. Nathan Sharpe, the inventor of the Simplex tea machinery, the *Indian Planters' Gazette* has an interesting article on Mr. Sharpe's patent oxidiser. The article is so full of practical interest that, despite the great pressure on our space, we feel no hesitation in reproducing the major portion. The four essentials for oxidising or fermenting leaf are coolness, moisture, a gentle draught and darkness. These are all embodied in Mr. Sharpe's apparatus. He says that it is his opinion, judging from his experiences at Lungla with both fine, medium and coarse plucking, that he can guarantee a perfect oxidation of either kind in two hours and forty-five minutes, at a temperature of 80° Fahr.

Mr. Sharpe found that the curtains did not require saturating, but only to be kept moist. By so doing, the saturation point was kept below that of the rolled leaf, enabling just the desired amount of superfluous moisture from the leaf to be taken up by the slight current of air passing through the machine. Mr. Sharpe maintains that, in the ordinary way, covering with damp cloths, not only absorbs the moisture, but together with it a good deal of the liquor, which is proved by the discolouration of the cloths always met with. In Mr. Sharpe's machine, however, there is no possibility of any of the liquor being wasted, as no cloths are used, or are in any way necessary. Moreover, the leaf is exposed directly to the oxygen contained in the air passing through the machine, and this coupled with the coolness, moisture and darkness, produces a bright even colouring, impossible to obtain by the ordinary methods in vogue.

In ordinary fermenting room methods the rolled leaf is spread, sometimes on cloths or blankets on tables, sometimes on the floors; in both cases invariably covered with cloths or blankets, either wet or dry. These methods prevent any air that may be moving, supplying the leaf with oxygen. The currents of air, the moisture, temperature and light vary considerably in different parts of a large room. The result is irregular times of oxidation, and irregular colours, which produce a fluctuating quality, and which, to a great extent, accounts for the difference in each day's manufacture experienced on some estates, and which are attributed to entirely different causes.

In the "Simplex" Cool Oxidiser, Mr. Sharpe claims that the *mál* (roll) is subjected to correct and equitable treatment, each separate *ghánny* (lot) of rolled leaf, obtains its full share of oxygen, by the constant, gentle supply of fresh, cool, moist air, kept at one fixed temperature, in a compact and perfectly dark chamber. An even colouring is produced in a certain regular fixed time, which Mr. Sharpe maintains results in the season's crop, maintaining a high standard of quality, and improved and steady average prices.

Besides giving the long felt want of correct oxidation of rolled tea leaf, the oxidised teas when fully manufactured have a very much blacker appearance than those fermented in the ordinary way, and this fact has been noted by one of the first Tea Broker Firms in Calcutta.

A great point about the machine is its mechanical simplicity, the only moving parts being the two air propellers. There is no gearing or other complicated mechanism to get out of order, and those who are acquainted with tea life in Indian and Ceylon estates will readily appreciate

the great advantage, to say nothing of the saving in renewals.

As every planter well knows, the leaf when it leaves the roller comes out very much heated, the temperature being about 94°. When passed through the Moreland Rolled Leaf Separator, Aerator and Sifter, it is brought down to about 90° in the space of a few seconds. On being at once placed in the Oxidiser, standing at 80°, the temperature of the leaf immediately drops 10°. This sudden chilling has the effect of enhancing the aroma of the leaf, which has a most agreeable and pleasing smell.

Mr. Sharpe maintains that it is just as essential that the rollers should be placed and worked in a room, entirely shut off from the Driers, which room should be kept darkened and cool. The Oxidisers and Rollers should be placed together in a rolling room, the air cooled by the Oxidisers being utilised to keep the room at a low temperature. The methods chiefly in vogue at present are to have the rollers and dryers too much together, the result being that, in many cases, the hot air exhausted from the driers, reaches the leaf in the rollers, and heats it more than it otherwise would, if the rollers and driers were kept in separate rooms.

DISTRICT ASSOCIATIONS.

SHEVAROYS.

PROCEEDINGS of the Quarterly General Meeting held in the Victoria Rooms, Yercaud, on Monday, July 5th, 1897, at 1-30 P.M. Present:—Revs. J. M. Kempf, M. Andersen, Messrs. W. Rahm, C. Rahm, Junr., C. G. Lechler, S. Campbell, C. D. Ricketts, W. W. Hight, E. H. King-Harman, R. Foulkes, T. B. Nicholson, C. Sice, R. Gompertz (Chairman), H. W. Leeming (Hon. Sec.), and Mr. E. P. Lake, as a Visitor.

Notice calling the Meeting was taken as read.

Confirmation, or otherwise, of the Committee's Proceedings for the past Quarter.

Mr. C. G. Lechler [on a previous resolution on the subject] having wished the sense of the Meeting to be taken, in view of the proposed construction of the Bandy Ghaut Road, as to the advisability of erecting sheds at the foot of the Ghaut for the storage of manures, &c.; it was put to the Meeting and carried *nem. con.* "that the erection of these sheds was necessary."

The Meeting then "unanimously approved of the Committee's Proceedings for the past Quarter."

Suggestion by the Honorary Secretary that the Collector, the Executive Engineer, the Superintendent of Police and the Forest Officer, of the Salem District be invited to become Honorary Members of the Shevaroy Planters' Association.

This was carried unanimously.

Election of Delegates for the Annual Meeting of the U.P.A.S.I. Mr. C. G. Lechler and the Honorary Secretary [Mr. H. W. Leeming], ex-officio, were elected as delegates to represent this Association at the Annual Meeting of the U.P.A.S.I. to be held at Bangalore on Monday, August 9th, next, and following days.

Read Circular, dated 12th May, 1897, from the Secretary U. P. A. S. I. re Mr. J. A. Harris's suggestions for—

(i) A Scientific investigation into Leaf-Disease.

Proposed by Mr. H. W. Leeming.

Seconded by Mr. E. H. King-Harman.

"That this Association, whilst not approving of Mr. Harris's suggestion at present, would propose that the U.P.A.S.I. be requested to elect a Committee, composed of a certain number of Members from each District Association, in order to investigate leaf-disease in the various coffee Planting Districts of Southern India; and that steps for an investigation by a Scientific Expert should then be considered after the Committee has sent in its report."

Carried unanimously.

(ii) The Division of the U.P.A.S.I. Funds between the Tea and Coffee Interests.

Resolved "that Mr. Harris's Scheme, for the Division of Funds, has the support of this Association."

Mr. E. H. King-Harman having requested the Meeting to accept his resignation as a Member of Committee of this Association, Rev. M. Andersen was unanimously elected in his place.

Read Circulars, dated 28th May, 1897, and 9th June, 1897, from the Secretary, U. P. A. S. I., re—(i) Mr. H. G. PARSONS' Scheme for Individual Membership to the U. P. A. S. I. (ii) Mr. G. L. ACWORTH'S Scheme for raising funds for the U. P. A. S. I.

Resolved "that this Association, whilst not in favour of Mr. PARSONS' Scheme, approves of Mr. G. L. ACWORTH'S suggestion for raising funds for the U. P. A. S. I., which is, practically, that proposal of this Association on June 8th, 1896; yet, this Meeting giving Delegates a free hand in this matter at the Annual Meeting of the U. P. A. S. I. to be held on August 9th, 1897, and following days."

8. Read and recorded the following:—(i) Circular, dated 28th June, 1897, from the Secretary, U. P. A. S. I. re the N. Wynad District Board, (ii) Circular, dated 3rd July, 1897, from the Secretary, U. P. A. S. I. re Antwerp as a market for Indian Coffee. (iii) Letter No. 25th June, 1897, from the President, Salem District Board, re A. G. NICHOLSON'S complaint regarding delay in sanctioning a road. (iv) Letter No. 28th June, 1897, from the President, Salem District Board, re Mr. KING-HARMAN'S complaint against the Hospital Assistant at Yercaud.

With a vote of thanks to the Chair, the Meeting terminated.

ROBERT GOMPERTZ,

Chairman.

HERBERT W. LEEMING,

Honorary Secretary.

THE NILGIRIS.

THE following is taken from the *Madras Mail*, as being a considerably more detailed report than the official *résumé* published by the Association:—

At a meeting of the Nilgiri Planters' Association, held in Masonic Hall, Ootacamund, on Wednesday, the 21st instant, following members were present, namely: The Hon'ble Mr. P. Hodgson, Messrs. H. Wapshare, E. G. Windle, H. D. Wilbraham, W. O. Marden, Vans Agnew, Alexander, L. W. Gray, W. L. Eaton, W. Mullaly, J. H. Pascoe, H. Sheldrick, G. A. Marsden, W. Minchin, L. C. Liebenrood, G. Oakes, C. A. Martin, R. James, J. H. A. Tremenheere, J. Wapshare, F. P. Turpin, J. G. Finlay, A. G. Nicholson, and a few others.

A Committee Meeting had been held at "Lauriston" the previous day, and some of the Resolutions passed there were confirmed on this occasion, to which reference will be made in their appropriate places.

Mr. W. Mullaly was called to the chair, and proceeded to business at once.

I. The proceedings of the last meeting were taken as read, and confirmed by a show of hands.

II. The second subject before the meeting was the Report of the South India Planters' Enquiry Committee communicated to the U. P. A. S. I. and the Hon'ble Mr. Hodgson with G. O. No. 942 of 2nd July, which informed them that although there appeared to be no necessity to keep the Report itself confidential, the Government desired that the discussions upon it by the U. P. A. S. I. affiliated Associations should be conducted in Committee, rather than publicly at the Annual General Meetings. Accordingly, part of the Agenda was considered confidentially, and the remarks made by the various gentlemen who spoke on the subject are not reproduced. Two Resolutions, adopted at "Lauriston," were confirmed. These were:—(a) That this Association accepts with satisfaction the Report of the South India Planters' Enquiry Committee, except in respect to points which will be fully noticed in its communication to the U. P. A. S. I. with the reasons that induce it to propose amendments. (b) On the subject of the Coffee Sowing Act this Association proposes amendments which will similarly be set forth in its letter to the U. P. A. S. I.

III. Funds of the U. P. S. I. A.—A letter was read, dated 28th

giving Mr. H. G. Parsons' complete scheme for individual membership and also the Chairman's letter of the 2nd June containing the following proposals for placing the funds of the U. P. A. S. I. in a new and better position. (1) That the present method of assessing and voting be altogether abolished. (2) That an annual tax of one anna per acre in cultivation be levied on each Association. (3) That a vote shall be held for every Rs.10 so assessed. It is understood with regard to the above proposals that each Association can raise its assessment in any way it likes, that its assessment may include all future annual subscriptions proposed by members to the Reserve Fund; that no Association is bound to pay the full assessment, the only penalty for not doing so being a proportionate loss of votes, and that the yearly surplus of income over expenditure is to be paid over to the Reserve Fund out of which any excess of expenditure over income in any particular year will also be met.

The Hon'ble Mr. Hodgson spoke on this subject as follows:—

GENTLEMEN.—The question of U. P. A. S. I. funds comes up again before you this year, and next to the Enquiry Committee's Report, which has been discussed in Committee, this subject of funds for the United Association is the most important one before you. That the U. P. A. cannot work unless adequately supported by a regular and fixed income is an undoubted fact, and I believe I am right in proposing that every thinking planter in the country wishes to see it accomplished, the difficulty still being to arrive at a system of payment which will be fair and acceptable to all. Mr. Acworth, the Chairman of our U. P. A., has put forward a scheme which I will now lay before you for the information of those who have not already seen it. Its principles are:—(1) That the present method of subscribing and voting be altogether abolished. (2) That an annual tax of one anna per acre on cultivation be levied on each Association. (3) That a vote for every Rs.10 so raised shall be held. (4) That the rule relating to proxies shall hold good.

You will see that this scheme is based on an acreage assessment, and it is for you to consider if, in your opinion, this is a good and fair method of raising funds. Personally, I am against the principle of acreage assessment, and I said so last year at the U. P. A. meeting, when I remarked, "acreage and crop assessments have these two disadvantages, namely that you cannot enforce them, and that they tax the man of inferior financial position the same or more than they tax the man who is in a better financial position." My friend Mr. Acworth at the time held similar views, for he said, "You cannot enforce an assessment any more than you can a donation, and even if you could it is a far from equitable arrangement." Altered circumstances have undoubtedly, and probably with good reason, so far as his Association is concerned, led to my friend's change of view, but I see no reason to alter what I said then. Take for instance my first reason, viz.: "That you cannot enforce an acreage assessment," and apply it to our own Association. You will find that with a cultivated area of 31,000 acres only some 18,000 are represented by members of our Association, and even supposing that every member agreed to pay an acreage assessment, the figures would work out very unsatisfactorily compared to what might be expected from the acreage of our District. To illustrate the unfairness to the individual I would only mention Mr. Wapshare's case. Putting his cultivated area at 3,000 acres—I believe it is much more—could we ask him to pay an annual subscription of say Rs.187 per annum as against say Rs.12-8 to be paid by an owner of 100 acres of coffee, who would enjoy equal privileges and benefits from the Association? We held a Committee meeting yesterday, and we have been able to formulate a scheme for your consideration based on a principle for which we are indebted to Mr. Gray, and which seemed to us to be well worthy of consideration. The principles of the scheme are:—(1) fixed maximum and minimum annual subscription to be paid by each Association according to its means. The amount to be decided at the U. P. A.; (2) that every Rs.10 subscribed shall carry a vote; (3) that every Association shall be obliged to pay the sum agreed upon as its minimum subscription, but may subscribe up to a fixed maximum with increased voting power for every Rs.10 so subscribed; (4) that the rule relating to proxies shall hold good.

Thus, say we fix the annual subscription to be paid by this Association for the present at Rs.500 and other Associations in proportion, with the option of subscribing up to say a maximum of Rs.800 with

additional votes as before said, we shall have an income which the U.P.A. can rely upon, and it will be capable of expansion in case of necessity, by raising the annual subscriptions all round with the consent of the various Associations. In putting this scheme before you I would particularly wish to state that I do not think we should bind ourselves now to any absolute scheme. The final decision should, I think, be left to your delegates at the approaching meeting, for this reason, that if each Association sends its delegates there to vote for a scheme, we cannot expect to arrive at any conclusion whatever. I would ask you to give your delegates discretionary powers in this matter, they of course undertaking not to vote for any measure which has been distinctly vetoed by this Association. Thus they would not be able to vote for any scheme for raising funds of which individual membership formed a component part. I would ask you now to consider the scheme I have put before you and, if approved, to give your support in a Resolution, at the same time empowering your delegates to vote for any modification of it or amalgamation of other schemes that discussion at the U. P. A. meeting may show to be the most suitable and generally acceptable to the majority of Associations.

It was finally resolved by a majority to favour Mr. Gray's scheme, and to instruct the delegates of the Association to use their discretion in voting at Bangalore on the subject, but to bear in mind that this Association is opposed to the principle of individual membership, which is the feature of Mr. Parson's scheme.

IV. Powers of delegates to the U.P.A.S.I. meetings.

A letter was read by the Chairman requesting the Association to decide whether delegates shall be free to vote according to their convictions after hearing the arguments advanced, or whether their votes are to be given according to previous instructions independently of any fresh light which may be thrown upon the subject?

On this point Mr. Edmiston proposed and Mr. Wapshare seconded a resolution to grant discretionary power to delegates to vote as this Association would wish under all circumstances, which was unanimously carried.

V. *Registration of the U.P.A.S.I.*—A circular on the subject dated 22nd May from the Secretary, U.P.A., was read, showing that until registration under the Companies' Act was effected, the U.P.A. had no legal status, could not hold property and could not invest its funds. The Hon'ble Mr. Hodgson proposed and Mr. Rhodes James seconded a Resolution affirming that the U. P. A. should be registered as a Corporation. The Resolution was unanimously carried.

VI. A copy of the Address to the Queen-Empress and photos of the casket in which it was presented were handed round for the inspection and approval of the members.

VII. A letter from the Secretary of the U.P.A., dated 28th April, proposing a *general* and a *special* form of proxy for voting at the U.P.A. was read, and the forms adopted, with an interrogation, whether the general form would be legal, after the contemplated registration of the U.P.A.

VIII. A letter was read, dated 15th June, from the Chairman, U.P.A., regarding arrangements made with the Editor of *Planting Opinion* as to publication of proceedings, and recorded.

IX. On the *Scientific Investigation of leaf disease, &c.* Proposals from Mr. J. A. Harris, Honorary Secretary of the South Mysore Planters' Association, were read asking that the services of an expert be engaged for the purpose by the U.P.A.S.I., and also Mr. R. Buchanan's proposition to the same effect. These were considered with a letter from Government to the Hon'ble Mr. Hodgson, making certain suggestions with regard to *Lady Birds* and forwarding a report from the Government of Hawaii. It was agreed that leaf disease should be a subject of investigation by the U.P.A.S.I., and the Hon'ble Mr. Hodgson made a few remarks on the letter he received from Government. He said that the papers forwarded to him showed that the late Mr. M. Lawson had considered the subject of leaf disease, but found that enquiries in 1892 made by him in India had not advanced his knowledge beyond what he knew in 1873, or on the conclusions of Mr. Ward. Dr. Cunningham had stated that leaf disease could not be eradicated with even the abandonment of coffee. He (Mr. Hodgson) was personally in favour of proposing the employment of an expert. From his interview with Sir Arthur Havelock in September last, he was convinced that His Excellency would give support to any reasonable proposal. The speaker alluded to the reply of the Honolulu Government, and letter of Mr. Marsden, Commissioner of Agricultural and Forests of Hawaii. After reading

that communication, he said, he addressed the Board of Revenue guaranteeing to pay half the cost of the importation of insects inimical to those that prey upon vegetable products. After a second interview with His Excellency, he was able to say that Government was in favour of procuring two kinds of insects through the Australian Government. His Excellency had also promised to communicate with the Government of India regarding the employment of an entomologist. Such an expert should in his (Mr. Hodgson's) opinion be able to deal with all insect enemies, such as red spider and borer as well.

Mr. Rhodes James then proposed and Mr. Oakes seconded a Resolution expressing the satisfaction felt by the Association at the interest evinced by His Excellency and the Government in the subject, and in the prospect held out of procuring an expert. Mr. Oakes added that the scale bug was on the increase in the neighbourhood of his estate and that from the coffee it was extending into the jungle. The Resolution on being put to the vote was unanimously carried.

X. Mr. J. A. Harris proposed that the U. P. A. S. I. should allot a certain sum each year to the different interests represented by it, and for carrying out investigations and experiments. This proposal was recorded after the Honorary Secretary's observation that the U. P. A. was struggling to maintain itself, and could not just now afford to lock up funds in the manner suggested.

XI. Regarding the Famine Fund the Honorary Secretary reported that the subscriptions aggregated Rs. 1,512-8.

XII. Mr. A. G. Nicholson's proposal *re* adulteration of manures was then considered. This gentleman wanted Government to be asked to adopt the draft Act regulating the sale of manures in Ceylon as published in the *Tropical Agriculturist* for March 1897. The mover stated that the draft had been prepared by lawyers, and that it provided against adulteration by insisting on a warranty by the vendor and also for the services of an analyst. It applied, he said, equally to retail and wholesale transactions. He believed the Association needed assistance in this matter. It was suggested that a few cases only of adulteration would not suffice to send up to Government to induce it to legislate, but that a great number were required. After some further discussion, it was resolved that the delegates of the Association be asked to bring the subject before the ensuing meeting of U. P. A. S. I.

XIV. The Honorary Secretary made a report on the operations of the Famine Labour Committee, and in the course of his remarks said that a good business man had been sent to Cuddapah, but that he there met with great difficulty in carrying out his instructions. His last letter said that coolies had been despatched but they had not yet arrived on the Hills. The instructions given the agent were that his selection was to be from the ryot class, and that the people should be made to understand their travelling expenses would be debitable against advances made. The Railway Company had promised a reduction of 10 per cent. on fares in the case of gangs exceeding 60 in number. At Mettapolium he had arranged for the issue of cumbies.

Mr. Rhodes James said that in the case of importations of such labour into Travancore, the travelling expenses were not charged against advances.

XV. A letter from Veterinary Surgeon W. Robertson was read, stating his willingness to settle on the Hills and give his professional services to the planters, if he was adequately supported and guaranteed a monthly subscription. He had been informed, the Honorary Secretary said, that there was a paucity of live stock on estates, and that the Association could not guarantee employment or the necessary subscriptions. His letter was recorded.

XVI. Malarial Parasite G. O., dated 19th March 1897, was read postponing consideration of this subject.

XVII. Act XIII. of 1879. Satisfaction was expressed with the rulings of the High Court on this subject. A ruling on a case referred by the Collector of the Nilgiris suggested the moral to the planters, when filing cases under the Act, to include in their complaints both original and subsequent advances made.

XVIII. A circular from the U. P. A. S. I. was read asking that statistics of cultivation might be sent in with promptitude, and recorded.

XIX. A letter from the Consul-General at Antwerp, dated 28th April last, was read and recorded *re* Antwerp as a market for Indian Coffee.

With a vote of thanks to the Chairman, a long and interesting meeting came to an end.

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Published Twice Daily—Morning and Evening.

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MARKET SUPPLEMENT.

SATURDAY, JULY 31, 1897.

COFFEE.

LONDON advices, dated 9th inst., state:—An exceedingly dull tone has prevailed and even the small supplies offered at auction have been more than sufficient for the demand. Ceylon Plantation was not much competed for and values tend downward. No East India was catalogued. The sortment generally offered no temptation to buyers, consisting chiefly of desirable qualities of Central American which only partly sold at very regular prices, but generally at a reduction of 2s. to 3s. per cwt. The united proportion of colory Costa Rica brought steady rates. There have been slight fluctuations in "futures," but the downward tendency has not been stopped; receipts of the new crop are fairly ample and estimates point to a good total; prices shew a further slight decline for the week.

Imports Deliveries and Stock of COFFEE in London are as follows:—

	STOCK.		IMPORTS.	
	1897.	1896.	1897.	1896.
West India.....tons	417	424	669	978
Ceylon	104	139	248	316
East India.....	2596	2832	4720	6566
Mocha.....	511	502	461	561
Brazil	2383	1294	1203	886
Other Foreign	8067	6130	16895	13848
Total tons...	14078	11321	24201	23155
	HOME CONSUMPTION.		EXPORT.	
	1897.	1896.	1897.	1896.
West India.....tons	196	316	410	672
Ceylon.....	93	226	177	268
East India.....	1243	1722	1667	3224
Mocha.....	286	300	122	120
Brazil	682	667	1379	1430
Other Foreign	5169	4708	6749	6288
Total tons...	7669	7939	10504	12002

The preceding figures exhibit:—

In the Imports an increase this year of	1046 tons.
Home Consumption a decrease of	270 "
Export a decrease of	1498 "
Stock an increase of	2757 "

Auctions this week have gone as under:—

CEYLON PLANTATION.—19 casks 3 tierces 2 barrels 2 bags sold, gray mulls 86s to 92s, middling 102s, gray bold 109s, boldish colory 111s, seaberry 106s to 111s.

	Receipts in Rio and Santos.			
	1896-97	1895-96	1894-95	1893-94
July 7—	Bags.	Bags.	Bags.	Bags.
Rio	24,000	12,000	5,000	7,000
Santos	23,000	12,000	10,000	5,000
Total 5 days				
Rio	61,000	40,000	29,000	26,000
Santos	74,000	50,000	32,000	17,000
	135,000	90,000	61,000	43,000
Since July 1.....				
Rio	80,000	68,000	64,000	64,000
Santos	117,000	79,000	79,000	40,000
Total	197,000	147,000	143,000	104,000
Crop	—	8,680,000	5,489,000	6,699,000

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (July 9, 1897) says:—Since our last the market has been dull and depressed and Public Sales were held only on three days when moderate supplies were offered, consisting chiefly of Central American and Columbian of common to middling qualities, of which only part sold slowly at the further important decline of 1/- to 3/- per cwt. The few desirable and colory parcels offered realised steady rates.

No East India was catalogued.

Futures.—Heavy arrivals at the Brazilian parts exercised a depressing influence, and although there was a slight recovery on our monthly statistics coming out better than was expected, prices have since given way again and are now nearly the lowest ever known. The European stocks last month show a reduction of 190 tons and the World's Visible also a reduction of 10,860 tons.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending July 7th, 1897, says:—Bank rate 2 1/2%. Bombay Exchange closes at 1s 2 1/2d. Brazil Exchange 7 1/2d. Rupee paper 3 1/2% 62 1/2. Silver 27 1/2d. per oz.

This market continues flat, and only a small proportion of the supplies offered found buyers at a further decline of 2s to 3s per cwt., all ordinary and medium kinds being very difficult of sale, good middling and fine, however, have again been well competed for at about steady prices.

Brazil markets have been weak, and close steady at the decline. Good average Santos is now quoted at 34s c. & f.

Daily receipts have averaged 9,333 bags in Rio, and 15,666 bags in Santos.

Futures, after having been weak for the greater part of the period under review, close steady at a decline of 6d to 9d, viz.:—Good average Santos in Havre, September delivery, fcs. 43.50, in Hamburg pf. 35, and No. 7 low ordinary Rio in New York \$6.85.

To-day's London official quotations are:—

	July	Sept.	Dec.	March	May
Rio	32/6	33/-	33/6	—	—
SANTOS	34/9	35/3	35/9	36/3	36/9
We quote:—					
Ceylon, mid to good mid.	98/ @ 106/				
Do. small to low mid.	87/ „ 97/				
East India, mid. to good	mid .. 88/ „ 103/				
Do. small to low mid.	76/ „ 87/				
Guatemala, mid. to fine...	75/ „ 102/				
Do. good ord. to low	mid... 62/ „ 74/				
Salvador, good ord. foxy	greenish... 55/ „ 57/				
Costa Rica, mid. to fine...	80/ @ 108/				
Do. ord. to low midling.	60/ „ 79/				
Jamaica, good to fine ord.	50/ „ 67/				
Do. greenish to fine	colory... 74/ „ 120/				
African	30/ „ 32/				
Columbian, ordinary	50/ „ 55/				
Do. good ord. to	low mid... 57/ „ 75/				
Do. mid. to fine...	76/ „ 98/				

Receipts in Brazil compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
Rio	56,000	56,000	59,000
SANTOS	94,000	67,000	69,000
	150,000	123,000	128,000

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated July 9th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	47,784 packages.	150,142 packages.	5,374 packages.
1896-1897...	40,004 „	149,951 „	7,575 „
18,511 pkgs. INDIAN	Total 53,872 packages were offered in public auction this week.		
33,751 „ CEYLON			
1,610 „ JAVA			

Indian. New Season's Teas are now arriving more plentifully. The quality on the whole appears scarcely up to the average; there were, however, some Teas with good character offered from "Darjeeling" and "Assam." The market showed considerable irregularity, good liquoring Teas continued in most demand and sold occasionally at somewhat better prices; poor Teas, however, were slightly easier. The official telegram from Calcutta gives exports to U. K. from the 1st April to the end of June as 9,945,000 lbs., against 11,400,000 lbs. for the corresponding period last season.

Week's av. of New Season's Tea sold on Garden Account, 1897, 11,780 pks., av. 4d. 1896, 7,844 pks., av. 8 1/2d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	2,454 p 9	2,935 p 9	4,996 p 9	4,491 p 8 1/2
Cachar and Sylhet.	2,514 p 6	3,046 p 7 1/2	3,576 p 6 1/2	5,323 p 7 1/2
Chota. Nagpore	—	34	4	34
Chittagong	—	—	—	—
Darjeeling	2,136 p 9 1/2	870 p 10 1/2	4,713 p 9 1/2	3,009 p 10 1/2
Dooars	587	8 512 p 8 1/2	1,348 p 8 1/2	850 p 9
Kangra, &c.	96	7 1/2 92 1/2 c 6 1/2	121 p 6 1/2	354 p 7 1/2
Neilgherry	383 p 6 1/2	—	516 p 6 1/2	130 p 8
Terai	—	—	106	8 1/2
Travancore	3,610 p 6 1/2	355 p 6 1/2	5,518 p 6 1/2	3,461 p 7 1/2

Total sold on Garden Account 1st June to date 1897, 20,894 pks., av. 7 1/2d. 1896, 17,652 pks., av. 8 1/2d.

SUPPLEMENT TO "PLANTING OPINION."

Comparative prices of Indian Tea in London:—

		1897.	1896.	1895.	1894.
DUST.	(Fair ordinary, dark liquor)	3½d	4½d	4½d	3½d
FANNINGS.	(Red to brown, strong rough liquor)	4d	5d	4½d	4½d
BROKEN TEA.	(Brownish to blackish, strong liquor)	6½d	7½d	6½d	6d
PEK. SOUG.	(Blackish greyish, useful liquor).	6½d	8d	7½d	7½d
PEKOE.	(Greyish to blackish, some tip, useful liquor)	8½d	9d	8½d	9½d
PEK. SOUG.	(Blackish greyish, inferior liquor).	5d	5½d	5½d	5d
PEKOE.	(Blackish greyish, some tip, inferior liquor)	5½d	6½d	6½d	6d

Ceylon. The heavy auction met with good attention from the trade and passed without material change in quotations, good liquoring Teas attracting the most attention and selling occasionally at rather higher rates. Less desirable kinds, owing to current low prices, met with a steady market, although in large supply. The official wire from Colombo gives exports to U. K. for the month of June as 11 500,000 lbs., and estimates the quantity available for July as 9½ to 10 million lbs. Exports to

U. K. from the 1st January to the end of June are 54,400,000 lbs., ag 52,250,000 lbs. for the same period last season. Average for week agst. rather under 7½d last year.

Ceylon Tea sold on Garden Account 1st January to date 578,156 pkgs., av. 7½d. 1896, 532,247 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

		1897.	1896.	1895.
PEKOE SOUG.	(Ordinary leaf; fair liquor)	6d	6d	6½d
PEKOE	(Ordinary leaf, little twist; fair liquor)	7d	7d	7½d
PEKOE SOUG.	(Rather bold leaf; indifferent liquor)	4½d	5d	5½d
PEKOE	(Somewhat bold leaf; indifferent liquor)	5½d	5½d	6d

Java. Teas brought forward were all of direct import and comprised a very varied selection, some of them being of very useful character, while others were of only poor quality. A Broken Orange Pekoe from "Dj. Nangor" realised 1/3½, and an Orange Pekoe 1/0½ per lb. The market unchanged, but competition was fairly general.

MOVEMENTS of TEA in LONDON (in lbs.) during JUNE.

	IMPORTS.			DELIVERIES.			STOCK.		
	1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.	1895.
INDIAN	2,092,857	2,077,521	1,827,783	9,018,317	8,587,849	7,717,224	25,309,752	20,240,282	22,925,9
CEYLON	10,709,464	10,158,358	8,822,542	7,868,446	7,333,190	6,933,554	22,794,198	21,382,702	19,610,7
JAVA	449,470	592,480	333,970	330,400	397,950	374,290	871,290	1,182,230	897,1
CHINA, ETC.	285,547	95,051	334,384	2,581,612	2,898,655	3,388,453	10,707,274	16,836,012	16,656,8
TOTAL lbs.	13,537,338	12,923,410	11,318,679	19,798,775	19,217,644	18,413,521	59,682,514	59,641,226	60,090,6

Bank rate 2 per cent. Exchange on London three months sight.—Calcutta 1/3½, Colombo 1/3½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 7½d.) July 9th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Du and Various	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	383 p	6½												
Curzon	174 p	6					59½c	7	60½c	5½	55 p	5½5½		
Kodanaad	114	7			24	7	40½c	9	19	6	16	5½	16½c	7
Pykara Falls	17	4½							17	4½				
Seaforth	78½c	7½	25½c	8½	32½c	6½7½			21½c	5½				
South Wynaad														
Chulika	36 p	6½			8½c	7½	8½c	9½	10	6½	8	5 5½	2½c	3½
Travancore	3610 p	6½												
Arnakal	164 p	6½	25 p	7	56 p	6½	54 p	7½	10 p	5½	2 p	5½	17½c	6
BA	48	4½					1	4½			44	3 4½	3	2½
BM	16 p	4									8	4½	8 p	3½
Bonaccord	256 p	6½	105	6½7½	47	6			93	5½5½			11 p	3 3
Braemore	250 p	6	8 p	5½	73	5½	144½c	6½			15	4½	10 p	3½
Brigton	41	4½			15	5	12	6					7	2½
Elderslie	20	4½							20	4½				
Fairfield	115	6	17	6½	29	6½	24	8	20	5	19	4½	6	3½
Glennary	138 p	6½	56	7 7½	13	6	54	6½6½					15 p	3½
Granby	20½c	4½			16½c	5								
Isfield T Co., Isfield.	78	6½			23	5 6½	41	½5½ +7	14	5½	3½c	4	1½c	2½
Kinmylies	58 p	6½	12½c	10½	38½c	6			6	4½				
M	25	4							25	4			2	3½
Mahandragherry	48½c	6½	8½c	10	32½c	6			6½c	5½				
Merchiston	96 p	5½	25½c	6	43	5½	10½c	5½					2½c	3
P	36 p	4½			4	5					13	4½	5	3½
Penshurst	331 p	6½	204	½6½ 8½	77	½5½			19	5½	24	4½4½	8 p	3
Poonmudi	433 p	6	111 p	5½7½	185	6½							31 p	5½
Rockwood	90 p	4½			74 p	4 4½	16½c	5½					10½c	3½3½
Sth. Indian TC KK.	347	7½	252	7½8½	54	6								
Sth. Travancor. TCV	250	6½	79	6½	70	6½	101	5½6½					41	3½6½
Stagbrook	249	6½			157	4½6½	61	7½	31	5½				
Travancore TE st BA	442	7½			109	6½ 7	293	8 8½	19	6½				
Wallardi	59	6			14	5½	25	7	19	5	1	5½	16	5½5½

Teas marked thus + are New Season's.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, AUGUST 7, 1897.

[No. 19.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; and Quarterly, Five Rupees, including postage.

ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 13th August 1897.

Nellampathy, British. 5th August.—Rain for week, 5.84; to date, 66.22. *Health.*—Fair, a lot of fever and dysentery about. *Labour.*—Mopla's coming up again. Malaya's offering readily.

Central Travancore. 28th July.—*Weather.*—For the last fortnight we have been enjoying splendid weather; a burst of rain has however set in again. Rainfall July, to date 37.31. Total for year, 111.80. *Labour.*—Fairly plentiful, especially Malayalees, who are just now easily obtainable owing to dearness of rice, etc., in low country. *General Remarks.*—Roads are in a dreadful state, though there are, I believe, numbers of coolies at work on them; but putting on mud and stones at this time of year is not of much use, as it only makes the roads a veritable quagmire.

Coorg. POLLI BETTA, 3rd August.—*Weather.*—Week ending 31st ultimo, rainfall 5.50 inches. Heaviest falls on 27th, 28th and 30th, 2.00, 1.40, 1.20 inches respectively. No rain on 25th and 26th. Amounts on two remaining days small. Monsoon continuing light with intervals of sunshine. Excellent for planting. *Plant diseases.*—Parts bound to have a go of "leaf" a little later on. Rot to some extent about. Some destroying borer still being done. *Labour* and health much the same as reported last week. Bazaar prices are reaching famine rates. Gram, 10/- 100 seers, common rice 8-9 seers per rupee. Rice-eating coolies are beginning to feel this.

Kadur. MUDGERE, 28th July.—*Weather.*—Rain has been fairly heavy this week, but on the whole the total for July will be below the average. *Plant diseases.*—The general hope is that after a mild monsoon as this has been, that leaf-disease will not be severe. The enemy has already appeared on some estates, but we all trust it will not be as bad as last year. Black rot is bad in most estates, and is to be found in the open as well as under shade. *General Health.*—Fever is still prevalent and many more deaths than previous years. *Labour.*—Plentiful, and gangs may be had without ad-

vancing: of course those coolies that were advanced early in the year don't appear, having got their money. *Interesting Items.*—The last Committee Meeting before the U. P. A. at Bangalore is to be held on 29th at Chikkanhully. Billets are scarce, and there are men of many years' experience leaving the district owing to "reductions."

Nilgiris.

KIL-KOTAGIRI, 1st August.—Beautiful planting weather, all the estates are having the vacancies filled in. Six new clearings are in full swing; one estate has put out 40,000 already, and more are going out every day. Rain fell on Monday and it has rained fairly well since. Coolies are in force everywhere almost. *Crops.*—Rather short through the rain that fell in the early part of the season and stopped the spike coming on. *Grain.*—Dear, coolies are complaining. Ragi 16 to 17 measures, gram 16 measures. *Health.*—Fair, a little fever about.

SHOLUR, 4th August.—The monsoon has absolutely disappeared, there being neither wind nor rain. Total rainfall to end of July 27 inches 15 cents, temperature 71° and 62°. Price of grains very much above normal. Labour very plentiful; flushes unsatisfactory, but with present weather should come on during the month. On the whole the season has been unsatisfactory. I have just received a Davidson's "Sirocco" Tea Roller, and if simplicity guarantees efficiency, it should prove a great success.

GENERAL NOTES AND ARTICLES.

THE COORG RAILWAY.

(Communicated.)

THE Coorg Planters in their Annual Report, which appeared in *Planting Opinion* of 3rd July, do not omit to refer to the oft-talked of railway for their province. They seem, however, from what was stated, to be as far off getting it as ever; and it looks very like playing with the subject when it is stated that "the line most in favour with the Chief Commissioner, Mysore Durbar; Commissioner of Coorg and others is an extension of the Arsikere-Hassan line to Sidapur (Coorg)." Then the Coorg men add: "If this line be continued from Hassan *via* Yedatore to Mysore on the east and Ammatti-Sampaga Ghât to Mangalore on the west, it will meet our requirements." They wouldn't apparently object if it went round by Cape Comorin! A long railway journey seems to be looked upon as quite a pleasure!!

In the first place it seems difficult to understand the *raison d'être* for a line from Hassan to Sidapur. From Hassan to Yedatore and on to Mysore, the capital, is easily understood, but to take a railway into Coorg at Sidapur from Hassan, looks as if there was a screw loose in the whole business somewhere, nor do things improve once they get it to Sidapur, for they speak of the line taking some roundabout course so that it may reach Mangalore. After all these years, however, the Coorg men have evidently not quite made up their minds as to which point on the coast it should be carried, for they say "that probably," (only probably) "a more direct and better service for the province would be an extension from Tellicherry *via* Coorg to Mysore." This proposal they have to add, however, "does not receive the countenance and support of

those with whom the question to a great extent depends. Now as to the comparative merits of the two proposed routes from Coorg to the coast, one would have thought there could not possibly be two opinions.

It is evidently recognised by all that Sidapur is to be a particular point in Coorg from which the line will start. From thence to Ammatti the lines are one. Here they diverge, one to Veerajapett and on down the Perambra Ghât or some neighbouring alignment into North Malabar and thence on to Tellicherry. What route the other is to follow in going from Ammatti in the direction of Sampaga I do not know, but whatever trace be adopted, it must be a matter of 25 or 30 miles. Once it gets down there, it is some 65 or more miles to get to Mangalore, and that over I should say, not at all an easy country. But meantime let us keep simply to distance. From Ammatti to Tellicherry is about 55 miles. From Ammatti to Mangalore cannot be less than 90 or 95. In fact the one is not far from double that of the other. Here is an element in itself which would tell at once in favour of Tellicherry.

But of course distance might be compensated by a large volume of traffic in produce, goods and passengers. Now, one, I am sure, who knows the two lines of country would place the one against the other in this respect. Leaving the Ghât portions in both cases out of the account, as they would yield but little traffic, on the Tellicherry route you have the town of Veerajapett second only to Mercara and some scattered villages on towards the head of the Ghât. From the foot of the Ghât to Tellicherry the district is well populated, and in the Moplahs you have an active enterprising set of traders, while the Tiers are not much behind them. A railway would be eagerly taken advantage of by them to increase their trade with Coorg and the farth interior in fish, salt, cocoanuts and other articles of co produce along with cloths and general merchandise. On the other hand you have anything but a thickly populated country in the South Canara track, and a much inferior class of natives, unlike the Moplahs and Tiers in energy and enterprise as two races could be, and there is no description of produce that would contribute largely to traffic. I feel sure that any statistics the planters have collected must confirm this.

But as if this were not enough to put the Sampaga scheme out of the running, there is the terminus at the coast. Mangalore as a sea-port is completely closed for some five months of the year during the South-West Monsoon, and in all seasons its treacherous bar renders it an unsatisfactory shipping port. This cannot be said of Tellicherry.

As to the engineering work, the difficulties, I should think would be, mile for mile, quite as great on the Mangalore route as on the Tellicherry line, while the upkeep of a long stretch of railway traversing the Ghât and low country exposed for some months every year to the full force of rains and floods of the S. W. Monsoon would be costly.

CENTRAL HOTEL,

INFANTRY ROAD, BANGALORE.

(Under English Management.)

The most comfortable and convenient for visitors.

TERMS MODERATE.

the extreme. Every mile saved in distance, therefore, under such conditions gives the shorter line an immense advantage.

Who then would for a moment hesitate as to which was the route to adopt? When so completely outmatched by the Tellicherry line, how in the name of all that is reasonable can the Chief Commissioner, the Mysore Durbar and the Commissioner of Coorg favour the Mangalore scheme? It is to be feared that if the views of these parties are what the planters state them to be, they cannot surely have had both schemes properly before them, or the most important elements must have been lost sight of.

But the fact is the Coorg Province labours under a serious disadvantage in this, and in other matters, in being under the far-off Bengal Government, and in having such an ephemeral set of Chief Commissioners to manage it. The continual changes that have taken place in the holders of this appointment tells greatly against Coorg. None of them can possibly have time, considering their other important duties as Resident of Mysore, to acquire anything like an intimate knowledge of the affairs of the province, and, besides, their interest is probably weakened by the prospect most of them have that their stay will only be temporary.

I fancy the Mysore Durbar is too much occupied with its own particular railway projects to give sufficient attention to that of Coorg. At the same time the Tellicherry line is one from which great benefits to Mysore would accrue. It would place the capital and many of the neighbouring districts within easy reach of the coast and provide a convenient outlet for much of their produce while affording the means of obtaining supplies both European and local. The town of Mysore and district lying in near proximity are about 300 and more miles by railway from Madras, their nearest port. The Tellicherry-Coorg line would bring them within 110 or 120 miles, some of the western districts 75 to 90, of the seaboard.

But confining the scheme meantime to Coorg, if a road be made to connect Santacooa and North Coorg with Sidapur, it will bring these districts 15 or 20 miles nearer a shipping port than they have been. They have generally sent their produce to Mangalore, 90 and more miles distant. By the Sidapur route Santacooa would only be about 75 miles from Tellicherry and districts lying north proportionately nearer. The road from Santacooa to Sidapur is one that should have been made long ago, but as the engineer of the province once remarked when it was mentioned by an outsider, "but the planters have never suggested it." I see it is now amongst the list of roads they wish undertaken. The Tellicherry line, therefore, has overwhelming advantages for Coorg.

The Coorg men, too, have only to remember that the Arsekere-Mangalore scheme, so far favoured by the Government that it went to the expense of a survey, has been abandoned. This new line to Mangalore *via* Sampaji I should say is a much worse one, and if the Government do go the length of a survey, which I much doubt, it will be quite as readily abandoned.

Let the Coorg planters work up the details of the Tellicherry scheme and make it clear to those "with whom the question to a great extent depends" that it has great and indisputable advantages over the other scheme, advan-

tages not only to Coorg but to a large area of country in the Mysore province.

STEAM.

The Anamalais.

With reference to the 80 square miles or 50,000 acres open for election by planters in this district, Mr. E. G. Windle, Hon. Secy., Nilgiri P. A., writes some interesting notes from Kotagiri on the 30th ultimo to the *Madras Mail*. Stating that he is the only one of the original applicants who has begun to open out in the district, he claims some little authority in stating that the area of land really suitable for tea or coffee is far under the gross 50,000 acres. He advises the utmost care in its selection. Health is very good, and fever practically absent from February to June. Climate remarkably even. Wind, on *well-selected land*, is absent, though a great deal of the 80 miles is wind-blown. Rainfall probably a little under 100 inches, heaviest in June and July, but with probably a good N. E. This year the fall from February to June was 11.18 inches, but this is probably abnormal. Felling is expensive, as the jungle is so heavy. Soil, sandy loam of great depth, with perfect drainage. Labour all imported. At the close of his letter he reiterates his warning as to the careful selection of land, as injudicious openings may do great harm to the name of the district.

COMMERCIAL NOTES.

THE report of the Nahor Rani Tea Company for the year ended December 31st states that owing to the unfavourable weather the outturn, especially of the Nahor Rani division, fell short of expectations, but the quality was fairly well maintained. With the exception of some invoices of "dust" disposed of in Calcutta, the teas were, as usual, sold on the London market, and in spite of depression realised an average of 10½d. per lb., which may be considered satisfactory. The result of the season's working, after deduction of the manager's commission, is a profit of £3,918. After paying on December 31st last the interim dividends, at the rate of 5 per cent. per annum for the half-year on the preference shares and 2½ per cent. on the ordinary shares, the Directors suggest declaring final dividends of 2½ per cent. on the preference shares and 7½ per cent. on the ordinary shares. Since the last report he area under cultivation has been increased by 80 acres, planted out with seedlings last year and 150 acres planted out with seed at stake last cold weather. Further clearances are being made, and it is hoped that other 138 acres will be planted out before the end of this year, bringing the total area under tea up to about 1,400 acres. The severe earthquake of the 12th ult. has done some damage to the buildings, but the Directors do not anticipate the season's working will be seriously interrupted, though there may be a considerable extra expenditure entailed in replacing and repairing these buildings. The crop for the current season is estimated by the managers at 480,000lbs.

THE report of the Singlo Tea Company, Limited, for the year ended 31st December last, states that the following shows the outturn of tea and the average gross price per pound for each division:—Singlo, outturn in lbs. 907,002, average gross price 9.33d.; Jaboka, outturn in lbs. 400,064,

average gross price 9.61d.; Kistna, outturn in lbs. 328,158, average gross price 7.97d. The Directors fully anticipated favourable results from the working of the year 1896. They attribute the failure to achieve the expected success to a want of system, and a mismanagement which resulted in a great excess of expenditure over the sanctioned estimate. The Directors have taken special measures to remedy this, and they consider the present year's prospects good. The late earthquake has not injured the properties of this Company. The board recommend, after providing for the preference dividend of $6\frac{1}{2}$ per cent., a declaration of a dividend for the year of 5 per cent. on the ordinary shares.

THE London correspondent of the *Madras Mail* sends the following interesting news:—

An important Company is being formed, under the auspices of Messrs. Arbuthnot Latham and Co., and will be entitled the Nilgiri Plantation Company, for the acquisition, carrying on, and development of the Runnymede tea and coffee, Adderley coffee, Colacumbie coffee, Glenburnie tea and coffee, Arcood coffee, Rookery coffee, Mullapore coffee, and Glendale tea estates on the Nilgiris; the Porthoondoo, Sherenilly and Nadgani coffee estates on the Neliampathies; and the Pillavelley coffee estates on the Pulneys. The total area of these estates is 3,339 acres, of which 1,870 acres are planted; and the yield in 1897-98 is estimated at 350 tons of coffee, and 95,000lbs. of tea. Assuming that the yield of coffee will be only 300 tons, then the revenue from this source will, it is believed, be about £10,811, and the 95,000lbs. of tea are expected to realise (at 12 annas per pound, local price,) £12,117. Deducting £600 for expenses in London, there should remain a net revenue of £11,517. The proposed share capital is £150,000, divided into 7,500 cumulative 7 per cent. preference shares of £10 each, and the same number of ordinary shares of the like valuation; but the present issue will be only 4,500 of each class of shares. Power is also taken to raise 350 first mortgage 5 per cent. debentures of £100 each, the whole of which are now offered. The £11,517 will suffice, therefore, to pay the 7 per cent. interest on the 4,500 preference shares, 5 per cent. interest on the debentures, and leave £6,517 for dividend on the ordinary shares and for reserve. The ordinary shares are not to receive a greater dividend than 10 per cent. until a reserve fund of £10,000 has been accumulated. The vendors are mostly members of the Stanes family, who have done so much in the last thirty years to develop the resources of the Nilgiris; and the general management of the Company's business in India will be conducted for five years by Mr. A. E. Ramsay and Mr. J. Stanes, who agree to retain for that time £20,000 out of their shares in the Company. No account is taken of the raw leaf on Runnymede and Glenburnie, which is sold and manufactured at Glendale, and is estimated at 50,000lbs. for the current year, equal to 12,500lbs. of made tea; nor are 150 to 200 acres of young coffee, coming into bearing on different estates, included. The value of the coffee estates is estimated, on the authority of Mr. A. N. Groves, of Coonoor, at £108,000, or about £60 per acre; and the price of the Glendale estate is valued by Mr. W. L. Edmiston, of Kotagiri at £9,000, but the vendors refused to accept less than £10,000 for it, and the Directors have agreed to pay the larger sum as they have been informed by Mr. R. Stanes that the average net profits for the years 1895 and 1896 were equal to 14 per cent. on this price, although the estate is not yet in full bearing. The crop of tea is nearly all sold in India, and a large local connection has been worked up at very remunerative prices. The properties are to be taken over as from the end of last March. Mr. L. Gough Arbuthnot, of Messrs. Arbuthnot Latham and Co., is the Chairman; and Mr. E. L. Marshall and Mr. J. B. Keith (Chairman of the Anamalai Coffee Company) are the Directors in London.

LETTERS TO THE EDITOR.

NOTICE TO CORRESPONDENTS.

["MIDDLE VIEW'S" letter declined with thanks. He refuses to withdraw his statements *re* the sobriety of his fellow-planters, but would substitute the words "a number" for "the majority." We should say it would have been more graceful and true of him to have changed the word into *minority*.]

NITRATE OF SODA.

DEAR SIR,—Can you or any of your readers inform me the results of "Nitrate of Soda" in helping on young supply, especially in a new clearing? and the safest dose per plant, 8 to 9 months' old after date of germination.

THAIRBIDDY ESTATE,
SANTAVERI, BERUR, S. M. RY.,
2nd August, 1897.

Yours faithfully,

SAM J. WILSON

SOME MISSIONARIES.

DEAR SIR,—It would be only just to record that there are Missionaries and Missionaries. There are men of the type Schwartz, of Travancore, whose name yet lives amongst natives of that district.

The Government of Madras had to fall back upon a man Schwartz as their ambassador to the ferocious Tippoo, who notified the Government that he would kill any European who dared to show his face. When informed that Schwartz would not, Tippoo replied, "That is a man of God, he may come when he pleases."

Schwartz was never seen in a suit of clothes that cost more than 8 rupees, and he lived on the simplest diet without falling into any of the absurdities of the Salvation Army.

Such a man was the late Bowen, of Bombay.

Yours faithfully,

ONE WHO KNOWS

COST OF LIVING ON PLANTATIONS.

SIR,—I exceedingly regret having so deeply offended your correspondent "Ad Rem," but surely such an old hand as I seems to be, should know that abuse is no argument. I thought neither "On the Cheap" nor myself pretended that living cheaply was exactly enjoyable, we merely pointed out how it might be, and has been, done. Absurd stress has been laid on my omission of the dhoby's charges. He costs me exactly four rupees for three washes a month, as from long experience I have found that to insist on the weekly wash is to attempt the impossible. Instead of that, I merely have to lay in a large stock of clothes. Not out of the 50 rupees a month, mind you, for I distinctly stated that clothes weren't to be got out of this sum at all. My bill of fare runs somewhat as follows, and may interest your indignant correspondent to know the composition of the "last straw":—

Chota Haziri.—Porridge, a chop or steak, bread and butter, and jam (home-made), and tea or coffee.

Breakfast.—Risssoles, or chop, or joint. Curry and rice. Bread and butter and cheese.

Tiffin or tea.—Bread and butter, jam and cake, also cold meat if joint is on cut.

Dinner.—Soup, joint or made-dish, curry and rice and bread and butter and cheese or plain pudding.

As for drinks, an occasional peg.

My bazaar bill now costs me (for meat, rice, fruit, groceries) Rs.3-8, or say Rs.16 per month. Soap, butter, jam, bread, or coffee, milk, &c., Rs.10 per month. Liquor and smoking Rs.15. Dhoby, Rs.4. Boy, Rs.15. Total, Rs.60. Add, Rs.15, estate clothes and boots, you arrive at my Rs.75 per month, which I estimated would keep a young planter very comfortably. Personally, I think that Rs.100 is the lowest I should offer a European of over 18 months' experience in planting. But as a beginning, Rs.75 should not be sneezed at, especially if yearly additions are promised—if work is satisfactory—of Rs.25 per mensem.

By the way, a "Planter's Wife" gave us some excellent directions some time back how a young planter should be enabled to keep a respectable and comfortable house on Rs.100 a month or so. While Rs.100 is better than Rs.75, and Rs.

han Rs.50, no man need starve or even stint himself if he has Rs.50 a month to his name.

EX-CREEPER.

PLANTERS AND HEMELEIA VASTATRIX.

SIR,—You may be surprised that I—Hemeleia Vastatrix—should write, but my excuse is that I am so delighted at seeing there is great want of unanimity among the Planting Community as to any measures being necessary for my suppression. The correspondence in reference to short crops in recent issues of *P. O.* has been very interesting to me, especially as I see different causes assigned; but to whatever cause the short crops are attributed, I can safely lay claim to a very fair share of the damage: the funny way I have had lately of attacking coffee late in the season, after deluding coffee planters into the belief that they were going to escape, has been extraordinarily successful, even more so than when I went for coffee early, as then the trees had some time to recover before blossoming. Late leaf disease is, I find, far more effectual than the somewhat crude method I adopted previously of attacking coffee earlier. When I saw in *P. O.* that the N. Mysore P. A., I think it was, proposed taking measures to secure the employment of an expert to investigate my cause, and to compass my destruction, I was considerably alarmed, as I was afraid that an unanimous appeal from the Planters to the Madras Government would have led to their joint co-operation, modern science would have soon cut short my career; but now I am no longer frightened, as I see the Wynad P. A. has pronounced an enquiry futile, and the Central Travancore P. A. says it is no use, as an enquiry took place in Ceylon some twenty years ago. I can't tell how delighted I am, Mr. Editor, at this helpless and hopeless attitude assumed by these Associations; it is such a striking tribute to my success, and recognition that I have completely knocked them out of time; but I hardly expected them to throw up the sponge in the way they have done. I used to hear it was a proud boast of Englishmen that they never knew when they were beaten, and many battles had been won through this virtue of keeping on pegging away; but apparently I have in some cases to deal with a degenerate race. The reason assigned by the Central Travancore P. A. is, to my mind, most extraordinary, namely, that an enquiry had been held in Ceylon years ago. One might imagine from that that the high-water mark of science had been reached at that remote epoch, and that from that date scientific discoveries had been *nil*. What amount of weight ought to be attached to a decision of the Central Travancore P. A. in reference to a matter of vital interest to the Coffee Industry of S. India can no doubt be calculated by your readers to a nicety. An investigation was made twenty years ago with a view of improving me off the face of creation, and the attempt failed, therefore a modern investigation is no use! It is really too comical and you must excuse my mirth, Mr. Editor—when I think of the enormous strides science of every description has made since I baffled investigation. Take the case of agriculture alone. Twenty years ago the soil itself was only considered a mass of dead matter, a chemical and mechanical mixture; no one even dreamt that each inch of soil was tenanted by millions of microbes; the action of legumes was unexplained, and I could go on enumerating many other beneficial discoveries, only it is sheer waste of time to devote either time or space to refute the ludicrous statement that finality was reached in scientific research twenty years ago; but I may warn all Indian coffee planters that if they don't discover some cure for my ravages I shall go on fulfilling my mission of damage and destruction. I need hardly tell you that I have my antidote, but I must leave it to human ingenuity to discover. Where are the crops of the good old days, got without any cultivation? Gone! and gone for ever; until an end is put to my existence. Your readers may think it strange that I should advocate an attempt to get rid of me; but when I think of the thousands and thousands of acres I have ruined,

the millions of happy lives blighted, homes broken up, hopes shattered, fortunes wrecked, the misery and destitution I have caused, it makes me repent and wish that some means could be found to extinguish me; but until that is done, I shall go on fulfilling my destiny of ravaging coffee while there is any coffee left for me to ravage. The apathy of planters is surprising, and I regret that I should be regarded as invincible. The remedy is in the planters' own hands. Act unitedly, and doubtless the sympathetic Madras Government will not be appealed to in vain. The employment of a modern scientist may or may not lead to my decease; if it does, the twentieth century would be the beginning of such an enterprise as would bring in fortunes to the planters, and an enormous revenue to Government. If unsuccessful I should, in addressing the coffee planters of India, still be able to subscribe myself then, as I do now,

Yours devotedly,
Till Death,
H. VASTATRIX.

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.65	"	Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE.

COFFEE.

A Leaf-disease Fund.

To some over-frugal minds and penny wise philosophers, it seems a terrible thing to provide funds sufficient to defray the cost of a scientific investigation into our plant diseases. But, as a correspondent points out, over 60,000 rupees might be obtained yearly by asking Government to levy the insignificant tax of 4 annas per cwt. of coffee exported from India. Divide the sum by 4 and still more than enough remains to cover all possible expenses to be incurred. The idea of the tax may strike our readers as something disagreeably novel and without precedent, but we have only to turn to Ceylon for an instance where the same principle is being carried out with conspicuous success with regard to tea, *i.e.*, the American tea fund.

The stake played for is so huge that it passes ordinary comprehension to understand the apathy of the planting community in relation to the extirpation of *Hemeleia vastatrix*. To save themselves a couple of annas or so per cent., will they lose the chance of making South India as prolific a coffee-country as Brazil, which, without leaf-disease, it would undoubtedly be? Such indifference is almost incredible.

The Market.

Contrary to expectations, the stocks on the 1st ultimo, says the *P. M.*, *Review* of 10th July, show a reduction in all parts when compared with a month ago. The European visible supply is only some 650 tons less, but in the United States there is a reduction of 8,090 tons, while in the whole world it is put at 10,860 tons. Taking into consideration the heavy receipts that have been taking place at the Brazilian ports, this would suggest a very decided increase in consumption, notably, as was pointed out last week, in the United States.

The publication of these figures at first produced an advance in the terminal markets, but the heavy daily receipts have since had a depressing effect and quotations have again receded to about the rates of a week ago, although the market in Santos has advanced about 1s. 6d. per cent. At the auctions there has been a very poor supply, and of that only part was sold, the lower grades showing a slight reduction, but all good coloury parcels fetched good values. Fine house trade sorts are very scarce, and good Costa Rica and East India have been re-sold privately at about 2s. to 3s. advance from the recent auctions.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
For the week ended July 3, 1897.	232	275	376	398	14,248	11,584
For the 26 weeks ended July 3, 1897.	7,538	7,734	10,798	12,244		

Java and leguminous shade.

In sending us the following cutting, a correspondent remarks: "The enclosed cutting from the *Madras Mail*, culled some three or four years back, may be of instruction to those of your readers who are interested in a discussion on this subject. Planting in Java is proved in this article, by published statistics, to be a very profitable undertaking, owing to the heavy yields of crops. May not the fact of "All the coffee is grown under *dadap shade*," have something to do with it? Perhaps Mr. B. Nelson will be able to supply us with further particulars.

"ONE INTERESTED."

PLANTING IN JAVA.

Soerabaya is a "slummy"-looking place—narrow streets—lots of mud and the roads rutty and bumpy enough to shake the liver out of one! To the stranger passing along the streets two things are especially noticeable; first, the marked absence of Chinese (happy Soerabaya!) and secondly, the happy, contented, and intelligent look of the natives of the place—from a cursory glance I should say a much superior type to the Javanese we get in the Straits. In Soerabaya I was given some coffee figures which fairly took my breath away. I have more to collect and will give the whole lot together. At present I am *currente calamo* and *currente jalana*! The country appears to be very thickly populated, the markets that we passed being crowded with women buying and selling; in some cases I should say there were over 2,000 present in one market. It is a quaint sight to see them riding along sitting astride their ponies, with a big pannier hung on either side. To show how these Javanese drivers rattle their ponies down hill, I give the following:—From Prorong to Prigin took us three hours. The return journey was done in one hour and twenty minutes! The steep portion of the ascent was done in one hour and three quarters, with much whip-thong and bad language. The same on our return was done smiling in twenty-three minutes. Before I forget it the etiquette of calling in Soerabaya seems curious. The correct hour is from 7 to 8 p.m. and you have to give notice if you intend to visit for fear of finding the ladies in sarong and kabaya. This last was told me in a whisper, so please print accordingly.

The coffee in East Java is wonderful. As in other countries, there are failures; but the successes are marvellous beyond description. All the coffee is grown under *dadap shade*; and, where the soil has any inclination to stiffness, it is constantly worked up with *changkol*. The young coffee is very forward; but perhaps figures of actual results will be more interesting than the most glowing descriptions of appearance. One estate that I went over gives the

following returns:—Total area 450 bouws. Age of coffee 12 years to 2½ years old. All expenses, including the cost of the young coffee not yet in bearing, are paid: and the coffee has further given a clear profit of two hundred and fifty thousand rupees over and above the capital invested. Ye gods and little fishes! Let us hope that the Malay Peninsula may erupt heavily. The old saying "It's money that makes the mare to go." I am sure that volcanic action that makes the coffee to grow. I am more or less sensitive about being called an Ananias; so I give the following figures taken from a Dutch Directory. The results are extraordinary, but I simply tell the tale as it was told to me. The appended table will, I am sure, be of interest to many a planter:—

TABLE OF RESULTS FROM SEVEN COFFEE ESTATES IN EAST JAVA.

Estate.	Elevation. ft.	Bouws.	Crop in Pikuls.					
			1884	1885	1886	1887	1888	1889
Limburg ...	1,200	600	1705	500	2041	5342	6160	5700
Ayer Dingin ...	3,500	503	3200	3300	5280	3913	4657	3145
Pangadjaram ...	2,500	462	2160	2230	4500	1964	7970	5550
Minjin ...	3,000	500	1600	3108	4150	1656	5620	532
Monorarie ...	3,500	650	3900	4300	1500	3600	2430	2200
Karang Nongko ...	800	316	...	3800	6000	2400	5000	4000
Kati Manis ...	2000	550	6000	3350	6000	1600	8000	3100

Let any practical planter work out these figures, and he will find a very healthy average at the end of them. The estimate for Limburg this year is 11,000 piculs; and there is every reason to expect that it will be realised. I have seen no poor soil. All is very rich, and of volcanic formation. The strongest complaint that I heard was that there was too much ash in it. Considering that analysis of the coffee bean shows over 30 per cent. of potash, it must be indeed abundant to be a sense of complaint! The hospitality of East Java is unbounded. Horses, carriages—everything in fact—are put at your disposal, and the merest stranger treated as visitors right royally. Another man and myself went to an estate the manager of which was unknown to us. We introduced ourselves and asked to be allowed to see his coffee. He took us over the whole himself, and then, after liquoring us up and asking us to smoke up a cigar (seegar obstaken), he insisted on lending us his carriage to go on with, as we should find it inconveniently hot to go riding.

The Java system of cultivation is thus: they work the soil, the bush. But little is done to the bushes after topping, except taking off the suckers: but the soil is kept constantly worked and open. Very little manuring is done: in fact one planter said to me: "If my coffee needed manure I should abandon it at once." I went over one estate that had just given ten piculs per bouw. The coffee looked well and in good heart, and able to be the same next year. Bawean is in regular communication with Java, and is only 8 or 10 hours' steam from Soerabaya.

The climate of the hills is delightful: cool and bracing: and I think that, if Singaporeans realised that such a delightful little sanatorium as Prigin could be reached at such a cheap cost, many would avail themselves of it. I also heard much of a sanatorium at Tosari, 6,000 ft. elevation, but had no time to sample it myself. The country swarms with game. A few days ago a planter shot three tigers three nights running. You can scarcely go a hundred yards without finding pigtrack; and there is other game in abundance. I have omitted one thing which struck me especially, and that was the extraordinary readiness of the Javanese to give you their figures. If you say, "By Jove! that sounds healthy," the reply is "Well, here you are; you can copy the figures if you like," and out come the books. One man was so kind as to have accounts, which were in Dutch, copied out in English for me. During my trip I came in contact with Scotch, English, Dutch and German; and upon my word it is hard to say which showed the greatest kindness to a stranger in a strange land. Before I close these jottings I must sound a note of warning. Let no aspiring young planter wishing to better himself, or out of a berth, say to himself, "Here is a paradise for a coffee planter, I will go and for a billet." Unless a man knows the Dutch language and customs, and at least one dialect of Javanese, he will have to begin at the bottom of the ladder on a salary of something like sixty rupees a month. Preference is also given to a man who has lived for a time either in Holland itself, or in Netherlands Indies. The etiquette in Du

Officialdom is somewhat complex: and a planter is frequently brought into contact with the officials, both in regard to his land and other taxes, his labour, and in many cases his water-supply. These dealings require much tact and "a deal o' salutin'."—*Singapore Free Press.*

TEA.

The Tea Duty. The chances of the Tea-duty being reduced in the near future seem, according to some optimists, considerably better than they were a short time ago, though we may confess that it will be found extremely difficult to make good the four millions odd to be sacrificed.

The London Market. INDIAN TEAS.—Says the *P. M. Review* of 10th ultimo:—The market has been more liberally supplied, and Wednesday's sale was the largest held during the present season. Over 8,000 packages were offered, consisting chiefly of new Teas, only about 3,200 being of last season's import. The large supply presented a varied and representative assortment, but, owing to the poor quality, most grades were dull of sale, and prices were somewhat easier. Good liquoring Pekoes, and Pekoe Souchongs from the Assam districts, were in demand, and the few desirable Teas met with active competition. Later a better selection of all descriptions may be looked for, as it is early in the season to expect attractive liquoring kinds with sufficient strength and quality. Common and Medium Broken Pekoes went off flatly at irregular and easier rates, the Teas on offer being poor in character. To ensure a demand from the trade generally for these grades, it is absolutely necessary that the leaf should not be too small, of good appearance and with thickness in cup, and until this is the case they will not go freely into consumption. Fine to finest Teas, both leaf and broken, including some tippy parcels from the Doom Dooma estates, were in strong demand, stocks of these kinds in dealers' hands being particularly low. Darjeelings were difficult to sell, the majority lacking the characteristic flavour so desirable in these grades. The following figures for the six months ending June will be of interest compared with the same period last year: Imports, 33,753,000 lbs.; Home Consumption, 62,517,000 lbs.; Exports, 2,731,000 lbs., as against 28,162,000, 61,598,000 and 1,681,000 lbs. respectively. Of the 18,000 packages offered at auction about 15,000 were sold.

CEYLON TEAS.—The quantity catalogued this work has again been large, but, contrary to expectations, the demand was fully equal to the supply, and previous prices were well maintained. Competition was good throughout the sales, and a desire to buy at the present rates was exhibited generally, as a strong feeling prevails that the lowest point in this market has now been reached. The medium and lower grades of both Whole and Broken Leaf continue to show exceptionally good value, and as it is more than probable that higher prices will shortly have to be paid for them, the present low range should stimulate the demand from the country, and a larger business in the immediate future seems likely. At the public sales 33,750 packages were offered, of which about 2,100 were withdrawn.

CONGOU TEAS.—The market continues extremely quiet, there being very little demand except for a few special descriptions. At auction a rather larger assortment was offered.

DISTRICT ASSOCIATIONS.

NELLIAMPATHY.

PROCEEDINGS of a General Meeting held at Valavachen Bungalow on Monday, July 19th, 1897. **PRESENT:** Messrs. A. Barnes, F. Everington, H. de C. Denny, R. D. Fenton, W. A. Gilbert, A. C. Griffin, F. Jones, E. Jones, M. H. M. Lamb, W. Morres, P. W. E. Watts, G. Welchman and J. C. Abbott, *Hon. Secretary.* Mr A. C. Griffin in the Chair.

Association Accounts.—For the past year were submitted by the Honorary Secretary and passed.

Hon. Secretary.—Mr. Abbott was re-elected, and a vote of thanks for his services during the past year was carried unanimously.

Bangalore Meeting.—Messrs. J. C. Abbott and P. W. E. Watts were elected as delegates, and the sum of Rs.150 each voted for their expenses.

Coffee Outturns.—Some discussion took place about these, from which it appeared that the outturns from estates using special bags were decidedly better than from those using ordinary bags.

Hospital.—The Honorary Secretary was requested to send round a circular to ascertain what members would be prepared to subscribe on an acreage assessment, towards the Rs.200 a month required by the Cochin Government, as a contribution to the maintenance of the proposed hospital.

Planting Opinion.—Resolved that this Association approves of the U. P. A. S. I. circulars being published in *Planting Opinion*, and thinks that members should support this paper.

U. P. A. S. I.—Read letters from the Secretary with reference to—The Report of the Committee of Enquiry, Statistics, Scientific Investigation, *Planting Opinion*, Address to Queen-Empress, and the Annual Meeting.

Statistics.—The Honorary Secretary stated that statistics for this district had been forwarded.

Rates of Pay.—Mr. Fenton drew attention to the rates of pay on some estates in this district, and after some discussion it was resolved, "that the usual rates and allowances should be adhered to, but in the event of any deviation from these rates in special cases, notice should be at once given to the Association."

Meetings.—The Honorary Secretary stated that as the number of members of this Association had considerably increased lately, it was no longer convenient to hold meetings at private bungalows. Resolved, "that a suitable building be put up at the expense of the Association. The amount required to be raised by an acreage assessment."

A vote of thanks to the Chair terminated the proceedings.

(Signed) A. C. GRIFFIN, *Chairman.*

(") J. C. ABBOTT, *Hon. Secretary.*

SHEVAROYS.

PROCEEDINGS of a Special Committee Meeting of the Shevaroy Planters' Association, held in the Victoria Rooms, Yercaud, on Monday, July 19th, 1897, at 1 P.M. **PRESENT:** Messrs. C. Rahm (Jun.), C. G. Lechler, R. Gompertz, (*Chairman*), J. C. Large, Revs. J. M. Kempf, M. Anderson, and Mr. H. W. Leeming (*Honorary Secretary*).

1. Notice calling the Meeting was taken as read.

2. Read Letter No. ⁸⁸⁷/_{B & S}, dated 5th July, 1897, from the Collector of the District, Salem, re the proposal to charge a commission on Currency Notes presented for encashment at the Yercaud Sub-Treasury.

Mr. R. Gompertz's reply to the above having been read, it was unanimously resolved:—

"That the Honorary Secretary be requested to forward a copy of Mr. Gompertz's letter to the Collector as representing the views of this Association. Further, that the Honorary Secretary be instructed to read the above correspondence at the Annual Meeting of the U.P.A.S.I. on August 9th next and following days; and that the Secretary be asked to place this subject on the Agenda Paper."

3. Consideration of the South of India Labour Commission Enquiry.

Mr. R. Gompertz having read a letter on this subject, it was unanimously resolved:—

"That Mr. C. G. Lechler be requested to read this letter at the

Annual Meeting of the U.P.A.S.I. on August 9th next and following days, as it expresses the views of the Association on this matter."

With a vote of thanks to the Chair, the Meeting terminated.

(Signed) ROBERT GOMPERTZ, *Chairman*.

(") HERBERT W. LEEMING, *Hon. Secretary*.

NORTH MYSORE NATIVE.

At the Annual General Meeting of the North Mysore Native Planters' Association, held at the Chickmagalur Club on the 26th May 1897. PRESENT: Messrs. C. Veeratha Gowda, (*President in the Chair*), C. Srinivasa Rao, V. Arnagiri Naik, T. Poopannashetty, M. Jagganath Rao, T. Ragavendrappa, G. Abdulkader Sahib, S. N. Chokanna, S. Raja Rao, M. Ganesha Rao, G. Abdul Kalik Sahib, W. Shama Rao, C. Jeffer Sahib, C. Ramaswami Iyengar, and C. Vasdeva Rao, (*Secretary*).

After the notice calling the Meeting was read, the Honorary Secretary read his report as follows:—

GENTLEMEN,—I have much pleasure in laying before you the Annual Report and accounts for the current year.

Subscriptions.—You will see that after paying our subscription to the U.P.A.S.I. for this year, we have a balance of Rs.95-10-0 to our credit for the coming year. I must again draw the attention of those members who have not paid up their subscriptions, to do so at once, as we are put to great inconvenience by not having paid our subscriptions to the U.P.A.S.I., and the Secretary has more than once sent in reminders to us. As I must send a remittance in full to the Secretary of the U.P.A.S.I. before the 15th June, I trust members will all pay up sharp to enable me to do so.

Last year we paid Rs.150, but it was found necessary to raise all subscriptions by 50 % so we have this year to pay Rs.225.

United Planters' Association Reserve Fund.—Subscriptions were called for to raise a Reserve Fund, but none of our members have responded. All the other Associations have come forward most liberally, and we ought to try and do something. The older Associations of course have funds to draw upon, but we are unfortunately still struggling to keep our heads above water, and must be satisfied to pay our way for the present.

Delegates for the U.P.A.S.I. Meeting.—I must ask you to elect two of our members to represent us at the meeting to be held at Bangalore. I may inform you in connection with this that other Associations make an allowance to pay some of the expenses incurred by their delegates attending the meeting. I hope this Association will adopt this plan and an allotment made this year to pay the travelling and other expenses.

Individual Membership to U.P.A.S.I.—With reference to the Individual Membership I have written to the Secretary to say that none of our members wish to become an individual member, and I myself am of opinion that the U.P.A.S.I. should be an "Association of Associations" and Individual Membership would be a mistake.

South of India Planters' Enquiry Committee.—The Report of the Committee has gone up to Government—we sent up an application praying that a Meeting should be held here, the centre of the planting Districts of Mysore, to enable the Committee to take the opinion of the Native Planters, Maistries and Coolies. Our application, I regret to say, was refused. I think you will all agree with me when I say we were quite unrepresented, and with the exception of the few English-speaking members who sent in their answers to the list of questions, the opinions of the Native Planters were not taken at all. We have Planters whose experiences of Coffee extends over 50 years and Maistries that have been recruiting labour for over 30 years, and their opinions and ideas of how the advance system started, if of no value, would certainly be of great interest.

The opinions of Maistries and Coolies would have given Government an insight into the other side of the picture and would have disabused the Government of the idea that the Coolie leads a life of slavery and oppression. The Committee lost an opportunity of putting on record the opinions of both employers and employed and the chance of getting together the information may never again occur. The Hon. Mr. Hodgson, the Planting Member of Council, has written through the Secretary of the U.P.A.S.I. to say that the Report of the Committee has been sent on to the Government of Madras by the Government of India. So I trust we shall have something definite on the subject at an early date.

Indian Famine Charitable Relief Fund.—The Secretary of the U.P.A.S.I. has sent me a circular asking us to send subscriptions to the Famine Fund, but as most of our members have subscribed to the District Fund, I have written him to that effect.

Coffee Association.—It is proposed to form a Coffee Association on the same lines as the Tea Association, but I have no particular of the matter. It will be fully discussed at the next meeting of U.P.A.S.I.

Address to the Queen-Empress.—It has been decided to send an address through the U.P.A.S.I. to the Queen-Empress and a Card costing Rs.500 has been ordered to be made by Messrs. P. Orr & Sons. The funds for same to be met out of the Reserve Fund. Copy of the Address with an amendment has been laid on the table. I have ordered 12 copies of the Illustrated Paper in which it is proposed to reproduce a Photo of the Casket for distribution among our members.

Statistics.—Forms of Statistics have been received and circulated among you, which I trust you will all fill up and return at once. The particulars are required to be embodied in the next Book of Proceedings of the U.P.A.S.I.

Leaf-disease.—A copy of a most interesting and important letter by Mr. Harris, Secretary of the South Mysore Planters' Association, has been sent to us, referring to the necessity for Scientific Investigation into the above. We have all suffered alike, and prospects for the coming year have been ruined by the virulent attack of Leaf-disease we had lately. Government should be asked through the U.P.A.S.I. to assist us by obtaining the services of an expert to enquire into the matter. It is of the greatest importance to us, this Association should do all in its power to render all the help it can.

Registration of the U.P.A.S.I.—It is proposed that the U.P.A.S.I. be registered under Section 26 of the Indian Companies Act. The funds in the hands of the Association are considerable, immediate steps should be taken to obtain Government sanction for Registration.

Mangalore-Arsekere Railway.—Mr. Graham Anderson has sent us a pamphlet and memorandum with reference to the above. I should, I think, press for the extension of the line to Chickmagalur that has been so long promised by the Dewan, and the matter should be brought forward at the Dussarah Assembly.

Roads.—I am glad to be able to report to you that the extension of the Baba Booden Hill Road has been opened out to 6 feet wide, connected with the Lingadhulli Birur Road, bringing the Railway within reasonable distance of all those living in the Jagar Valley. I hope that the Road will be opened out for Cart traffic by next season.

Our thanks are due to the Government for carrying this project out.

Abkari Rules.—I hear it is proposed by Government to institute a system of Tree Tax for Bogni Toddy, and that all trees are to be marked. And that "Proprietors of Coffee Gardens will be allowed to tap free of Tax 5 trees." It will be a great hardship to many of the Native Planters and to all the Mulnad Gowdas, so many of whom belong to this Association, if any restrictions are made as to the consumption of the toddy produced on their own trees. According to our Pattas and Grants the toddy trees growing on our Estates belong to us and not to Government, and we are to have the use of the produce for *bonâ fide* home consumption, that is we are not allowed to compete with Government by selling it.

As the Deputy Excise Commissioner aptly remarks, "Bagni Toddy has been the customary food and drink in the Malnad tracts for a long past," yet it is proposed to place restrictions on such an essential article of diet, and practically force the owner to buy the produce from his own industry and property from the Government.

It is also proposed that Proprietors "will be required to allow free access to their Estates without reservation to the Excise Officers." This I think is distinctly infringing on our rights, and Government should be asked to consider the matter, as I do not think any of us are prepared to allow "free access to our Estates without reservation to the Excise Officers."

Although I did not give you notice of this matter being brought up before the meeting, information of which I have only just received, yet as it is of such importance to us, I am bringing forward a proposition that before Government passes final orders, the opinions of all the various Associations and all others concerned and those most interested, the Malnad Gowdas, be for obtained.

In closing my report, I regret to have to call your attention to the very bad season we have passed through, and from all accounts the prospects for the coming year are far from cheering. On all sides a most virulent attack of Leaf-disease, and a too early insufficient rain followed by a drought of over two months have ruined what promised to be the long-looked for and longed-for bumper year. Prices, too, have fallen. Famine in the North and the Plague in Bombay have caused a great dearth of money, and we must congratulate ourselves on having

so far tided over the worst season on record. One good effect of the bad year, and I trust the improvement will be permanent, is that labour promises to be plentiful. Advances have been cut down by the European Planters and the wages to coolies taking advances reduced. If we all join in this and work together with combination amongst us, we ought to be able to reduce the price of labour and the cost of working our places. Grain is very dear on all sides, and large quantities are being exported from the province, for which we shall suffer later on.

The Government of Mysore has come forward at a most critical period with its timely aid in establishing Agricultural Banks. Two have been opened in the Coffee Planting Districts, one at Sucklasapur and one here, and the relief given by them to such as have become members has been incalculable. Had not the Government come to the assistance of the planters at a very critical time, the suffering and loss to a large number would have been very great. The doors of the Banks and Firms are closed to the greater number of us, and we have been driven for years into the hands of Sowcars, who have had us entirely at their mercy. The profits on coffee during the last five years, with the high prices ruling, have been very great, still these high prices have not been able to meet the drain of the exorbitant interest charged by the Local Bankers. For years the country has been drained of its money, and this year when the Plague broke out in Bombay and the Sowcars left it, the Merchants in Mangalore were not able to obtain and send advances, we found out how the country had been depleted of money. However a new and brighter era has opened out to the Planter and Agriculturalist in Mysore, and the thanks of all are due to Her Highness the Maharani-Regent and her Dewan for taking the first step in introducing these Banks into the Province, and I may say into India,—a step the Government of India has not been able to take.

Both the President and myself have tendered our resignations, and I must ask you to elect Officers for the next year and Delegates to attend the Meeting of the U.P.A.S.I.

Proposed by Mr. S. N. Chokanna and seconded by Mr. M. Ganash Rao, that the account and Report be accepted and passed, and a vote of thanks given to both the President and Secretary, and they be asked to again accept office for the coming year. Carried unanimously. Messrs. P. Veeratha Gowda and Vasudev Rao agreed to serve again.

Proposed by Mr. Veeratha Gowda and seconded by Mr. Abdul Khalik Sahib and carried that Messrs. S. N. Chokanna and Vasudev Rao be elected Delegates to attend the meeting of the U. P. A. S. I. in Bangalore.

Proposed by Mr. C. Srinivasa Rao and seconded by Mr. C. Vasudev Rao that subscriptions be raised for the U.P.A.S.I. Reserve Fund from such of the members as are willing to pay. After discussion it was decided that on account of the bad season and scarcity of money the matter be allowed to stand over till next year, when steps be taken to raise funds (1) either by increased Annual Subscription, (2) by an acreage tax or (3) percentage on crops, so that the Association may be in a position to send an Annual Subscription.

Proposed by Mr. T. Poopanna Chetty, seconded by Mr. W. Shama Rao and carried that it is considered inadvisable by this Association to allow Individual Membership of the U.P.A.S.I.—Carried.

Proposed by Mr. Arnakiri Naik that a Coffee Association be formed on the lines of the Tea Association, but after a long and warm discussion the Meeting was of opinion that there were more pressing matters requiring the resources and attention of the U.P.A.S.I. at the present time and that the matter be allowed to stand over.

Proposed by Mr. Veeratha Gowda, seconded by Mr. S. N. Chokanna, that Government be addressed through the U.P.A.S.I. asking for the services of a specialist to enquire into the causes of and suggest remedies for Leaf-disease. Carried.

Proposed by Mr. Veeratha Gowda and carried unanimously that the U.P.A.S.I. be registered as proposed by the Secretary.

Proposed by Mr. C. Srinivasa Rao and seconded by Mr. Arnagiri Naik that Government be approached on the subject of the long promised Railway to Chickmagalur. The town is daily growing in importance and a large trade is done with all parts of the country, and early steps should be taken to have a short line surveyed at once. Messrs. P. Veeratha Gowda, Poopanna Chetty and C. Srinivasa Rao were requested to form themselves into a Committee to collect statistics at early a date as possible and the Secretary be instructed to

address the Government on the matter. Proposed by Mr. Poopanna Chetty and seconded by Mr. Vasudev Rao that the attention of Government be brought to the deplorable state of the Malnad Roads. It was brought to the notice of the meeting by members that in many places side drains are entirely neglected, the centre of the road being the only drain for taking off the surface water, in other cases, silt from side drains is heaved in on to the ruts, material is stocked on the Road, and barely any room is allowed for traffic, and were the small amount of repairs done seasonably, the side drains all open and ready to carry off the storm water at the commencement of the monsoon, the roads would not be cut up and made impassable for the whole season as they are now.

In this connection Mr. Poopanna Chetty suggested that Government be asked to spend a certain amount of the Local Funds on the Roads in and to the Villages from which the Funds are collected. Most of the Planters have made Roads to their estates and opened up wheel traffic to Villages in all parts of the Malnad thus bringing them within touch of the Main Road. There is a large amount of traffic on these roads and they get very much cut up. In the course of a year or two they become almost impassable. If a certain amount of the Local Funds were allotted for the repair of these roads, simply for keeping the drains open and removing of slips, it would be of great assistance, and other Planters and Ryots would be encouraged to open out roads to other parts of the Malnad.

The Secretary was instructed to address the Deputy Commissioner on the matter and to take steps to have it brought forward at the next Dasseru Assembly.

Proposed by Mr. C. Vasudev Rao, seconded by Mr. Shama Rao, that the Deputy Commissioner be addressed with reference to the proposed Tree Tax on Bogni Toddy and as to the restrictions to be placed on the number of trees to be allowed to the Proprietors praying that the opinions of all concerned be obtained before final orders are passed. Carried unanimously.

After a vote of thanks to the chair the meeting terminated.

C. VASUDEV RAO,

Hon. Secretary,

North Mysore Native Planters' Association.

HE DID NOT GO TO AUSTRALIA.

NOTHING is easier than to recommend a man to go to Australia. A dozen words or so out of your mouth and you have done it. But for him to act on your advice—that is a gray horse of another colour. You see, Australia is half-way round the world: and to pull up stakes here and go there—family, interests, and all—is a job no man takes in hand save for the strongest sort of reasons.

Yet that is what Mr. Emrys Morgan Price, grocer and tea merchant, of Trehafod Road, Hafod, S. Wales, was advised to do by a doctor at Merthyr. Now, we don't say but that the result, if Mr. Price had gone, would have proved the doctor's judgment to be sound; but as it happened Mr. Price came out all right in the end by just staying at home.

The facts are briefly these: In August, 1881, the customary choral competition took place at Abergavenny, and Mr. Price attended. In some way—he fails to state how, and it doesn't matter—he took cold and had a chill. When he arrived home at Dowlais he could scarcely breathe. To draw his lungs full of air was quite impossible. In fact, he felt as if he were suffocating. Of course there was no more thought of singing; the question was one of getting breath enough to live on. He at once tried that good old-fashioned remedy, mustard plasters, putting them on his chest and perhaps on his back between the shoulder blades. They relieved him for the time, as we might expect. But mustard plasters do one thing—no more. They draw some blood from the inflamed parts to the surface; that's all. When they have set up a bit of mild counter-irritation they are done; they don't get down to deep causes. And here there was a deep cause. We will point it out presently.

There was a constant whistling noise in his throat, he says. You hear it in children when they have croup. It means that the air passages are contracted and the breath has to pass violently through a small orifice. Disease has often strangled people to death that way. "Next," he says, "a violent cough set in. I coughed and spat up thick phlegm night and day."

This meant more and worse inflammation, and shows us the spectacle of Nature trying to get rid of the product—the phlegm or mucus. But to cough night and day! Think of it. What becomes of a man's appetite and sleep? You can imagine. No wonder the doctor at Merthyr was anxious and suggested a change of climate.

Still, Mr. Price, as we have said, remained at home and consulted other physicians, one at Dowlais and one at Hafod. All the doctors agreed that their patient was suffering from acute bronchitis, and very properly treated him for that. Yet somehow their medicines failed to effect any real and radical good. That they were temporarily helpful we may not doubt. But, you see, bronchitis, once seated, is an obstinate and progressive ailment. It has a tendency to take up new ground and to get down on the lungs, the reason being that the lining of the air passages and of the lungs is all one thing. So an affection of any part of it, if not cured, spreads like fire in dry grass.

"As time went on," says Mr. Price, "I got weaker and weaker and my breathing became distressing to hear. All my friends thought I was in a consumption, and as a sister of mine had died of that complaint, I naturally felt alarmed. Indeed, one night in July, 1885, I was so bad that my wife thought I was dying."

Happily the lady was mistaken, yet death sometimes comes with fearful suddenness in that complaint, and her fear was very reasonable. At that time, please remember, our good friend had suffered about four years, and was in a state of low vitality. The whole body was feeble and exhausted, and there would have been nothing surprising in a fatal termination. But a better result was in store, as we shall now see.

Mr. Price's letter, dated August 16th, 1893, concludes in these words: "Better and worse I continued in the power of this malady year after year, and had given all hopes of ever getting better. In February, 1883, after having endured it 5½ years I read of a person at Pontypool having been cured of the same thing by Mother Seigel's Curative Syrup. I got a supply of it, and in a few days I felt relief. I kept on with it and gradually improved. *In six months the cough had left me and I was a well man.* Since then I have been sound as a bell. If you like you may publish my statement and I will gladly answer any inquiries. (Signed) Emrys Morgan Price."

Good! That is pleasant and cheering to hear. One word—an important word. Bronchitis, pneumonia, rheumatism, gout, nervous disorders, liver complaint, kidney trouble, and most of our familiar diseases are caused by poison in the blood; and the poison is produced by stomach fermentation, indigestion, and dyspepsia. Consumption itself comes in the same way. Mother Seigel's Curative Syrup drives out the poison and stops the manufacture of more. That's why it cured Mr. Price and will cure anybody.

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2 do do	" 35	" 30	" 20	" 12 do
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(This excludes extra postage where the weight of leaflets necessitates such.)

Advertisement charges are strictly payable in advance, except w. approved customers.

MARKET SUPPLEMENT.

SATURDAY, AUGUST 7, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (July 16, 1897) says:—Only a moderate amount was offered in auction this week consisting chiefly of Colombian and Central American part of which was bought in, but the remainder sold in some cases at slightly dearer rates. On the whole the market, although slow, showed some recovery from the depression noticed last week. About 680 bags East India were catalogued consisting partly of second hand parcels. The few good and colory lots realised steady prices, the remainder, chiefly undesirable, sold slowly or were bought in.

Futures.—Rather smaller receipts at the Brazilian ports and steady markets in Rio and Santos caused a recovery here of about 1/- and the general tone is better.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending July 14th, 1897, says:—Bank rate 2 1/2%. Bombay Exchange closes at 1s 3 1/2d. Brazil Exchange 7 1/2 1/2d. Rupee paper 3 1/2%. 63 1/4. Silver 27 1/8d. per oz.

The moderate quantities offered at auctions have gone off quietly at about previous prices, the small proportion of good and fine being well competed for.

Brazil markets are steady at the decline.

According to Messrs. Duuring and Zoon the European stocks on 1st inst. shewed a decrease of 1,250 tons, and the visible supply of 11,910 tons, the figures being 141,750 tons and 237,750 tons respectively, against 143,000 tons and 249,660 tons on the 1st June.

Daily receipts have averaged 11,286 bags in Rio, and 17,576 bags in Santos.

Futures have been steady, and quotations shew an advance of 6d to 9d, viz.:—Good average Santos in Havre, September delivery, fcs. 44.50, in Hamburg pf. 36 1/2, and No. 7 low ordinary Rio in New York \$6.90.

To-day's London official quotations are:—

		July	Sept.	Dec.	March	May
Rio	...	32/6	33/-	33/6	—	—
SANTOS	...	35/6	36/-	36/6	36/9	37/3

We quote:—

Ceylon, mid. to good mid.	98/ @ 106/	Costa Rica, mid. to fine...	80/ @ 108/
Do. small to low mid.	85/ „ 97/	Do. ord. to low midling.	60/ „ 79/
East India, mid. to good		Jamaica, good to fine ord.	50/ „ 67/
mid... 88/ „ 103/		Do. greenish to fine	
Do. small to low mid.	76/ „ 87/	colory... 74/ „ 120/	
Guatemala, mid. to fine...	74/ „ 102/	African	... 30/ „ 32/
Do. good ord. to low		Columbian, ordinary	... 50/ „ 54/
mid... 60/ „ 73/		Do. good ord. to	
Salvador, good ord. foxy		low mid... 55/ „ 75/	
greenish... 55/ „ 57/		Do. mid. to fine...	76/ „ 98/

Receipts in Brazil compare as follows with previous years:—

		1897-98.	1896-97.	1895-96.
		Bags.	Bags.	Bags.
Rio	...	135,000	124,000	95,000
SANTOS	...	217,000	140,000	133,000
		352,000	264,000	228,000

Auctions:—

51 casks and tierces 20 barrels and bags Plantation				
Ceylon	...	@	70/	@ 117/
71 bags Wynaad	...	...	73/6	„ 95/
319 barrels 39 bags Jamaica, part sold	...	...	45/	„ 73/
98 bags Costa Rica	...	...	68/	„ —

1,292 bags Guatemala, small part sold	...	...	@ 57/	@ 85/
1,144 bags Salvador, part sold	...	...	„ 52/	„ 61/
571 bags Nicaragua, bought in.				
909 bags Vera Paz, small part sold	...	...	„ 79/6	„ 107/
46 bags Mexican bought in.				
2,883 bags Columbian, chiefly sold	...	...	„ 43/	„ 95/
268 bags Guayaquil bought in.				
23 bags Nyasaland bought in.				
171 bags Liberian Johore bought in.				
154 half-bales Mocha bought in.				
On Quay Terms:—				
113 bags Santos, bought in.				

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated July 16th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	55,287 packages.	180,756 packages.	6,672 packages.
1896-1897...	45,085 „	171,639 „	7,575 „
7,503 pkgs. INDIAN	Total 39,415 packages were offered in public auction this week.		
30,614 „ CEYLON			
1,298 „ JAVA			

Satisfactory progress in the use of both Indian and Ceylon Tea has been made in North America during the last few years. The following table is encouraging, and appears not only to justify the expense incurred by India and Ceylon in forcing their Teas in this market, but rather to stimulate them to even greater exertions. The small quantity exported direct from India and Ceylon via China to North America is not included in the table.

Transshipments and re-exports Indian and Ceylon Tea from 1st January to 30th June.

	INDIAN.		
	1897.	1896.	1895.
Transshipments to N. America	1,890,940	1,115,981	338,275
Re-exports to N. America	1,175,979	623,317	819,560
Total lbs. ...	3,066,919	1,739,298	1,157,835
	CEYLON.		
	1897.	1896.	1895.
Transshipments to N. America	982,759	564,790	333,127
Re-exports to N. America	2,199,930	1,460,044	1,307,406
Total lbs. ...	3,182,689	2,024,834	1,690,533

Indian. The quantity brought forward has been comparatively small and consisted mainly of New Season's Teas. These met with good attention from the trade, and sold at slightly better prices wherever the quality was good, but quotations for poorer grades were unaltered.

Week's av. of New Season's Tea sold on Garden Account, 1897,
4,462 pks., av. 8 1/2d. 1896, 3,254 pks., av. 9 1/2d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	... 1,079 p 9 1/4	1,049 p 10 1/4	6,075 p 9 1/4	5,540 p 9
Cachar and Sylhet..	691 p 5 1/2	621 p 7 1/2	4,267 p 6 1/2	5,944 p 7 1/2
Chota Nagpore	...	—	—	34
Chittagong	...	—	—	—

SUPPLEMENT TO "PLANTING OPINION."

	1897.		1896.		1st June to date 1897.		1st June to date 1896.	
	Pkgs.	Price.	Pkgs.	Price.	Pkgs.	Price.	Pkgs.	Price.
Darjeeling	... 1,446 p	9	762 p	11½	6,159 p	9¼	3,771 p	10½
Dooars	... 780	8½	—	—	2,128 p	8¼	850 p	9
Kangra, &c.	... 55	6½	92	7¼	176 p	6¼	446 p	7¼
Neilgherry	... 162 p	7¼	—	—	678 p	6½	130 p	8
Teral	... —	—	—	—	106	8¾	—	—
Travancore	... 249 p	6¼	730 p	6½	5,767 p	6¼	4,191 p	7¼

Total sold on Garden Account 1st June to date 1897, 25,356 pkgs., av. 8d.
1896, 20,906 pkgs., av. 8½d.

Comparative prices of Indian Tea in London:—

		1897.	1896.	1895.	1894
DUST.	(Fair ordinary, dark liquor)	... 3½d	4½d	4½d	3½d
FANNINGS.	(Red to brown, strong rough liquor)	... 4d	5d	4¾d	4½d
BROKEN TEA.	(Brownish to blackish, strong liquor)	... 6¼d	7¼d	6½d	6¼d
PEK. SOUG.	(Blackish greyish, useful liquor).	6¾d	8d	7½d	7¼d
PEKOE.	(Greyish to blackish, some tip, useful liquor)	8½d	9d	8½d	9½d
PEK. SOUG.	(Blackish greyish, inferior liquor).	5d	5½d	5½d	5d
PEKOE.	(Blackish greyish, some tip, inferior liquor)	... 5¾d	6½d	6¾d	6d

Bank rate 2 per cent. Exchange on London three months sight.—Calcutta 1/3¼, Colombo 1/3¼.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8½d.) July 16th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	...													
Kodanaad	... 162 p	7¼	—	—	57	7½	43	8¼	21	6½	22	5¼	19½c	6¼
Travancore	... 249 p	6¼	—	—	—	—	—	—	—	—	—	—	—	—
Ashley	... 75	5½	—	—	54	5 5½	16	6½	—	—	3	4	2	3
Atchencoil	... 57	7¼	—	—	26	6	31	7¾	—	—	—	—	—	—
Parvithi	... 117½c	6¼	—	—	26½c	7	30½c	7¾	48½c	5¾	—	—	13½c	6

Ceylon. The auction was again heavy, comprising 30,614 packages against 33,751 last week. Competition was more animated, and bidding general throughout the sale. Teas with good quality attracted more attention, and sold at better prices. Other kinds sold at slightly higher quotations wherever any improvement was noticeable in liquor, the poorer grades showing no change in value. On the whole there are signs of probable improvement in quality, such as generally takes place about the time of the year. Average for week 7d., against 7½d last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 607,159 pkgs., av. 7¾d. 1896, 553,552 pkgs., av. 8¼d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894
PEKOE SOUG. (Ordinary leaf; fair liquor)	... 6d	6d	6½d	5
PEKOE (Ordinary leaf, little twist; fair liquor)	... 7d	7d	7¾d	7
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	... 4½d	5½d	5½d	4
PEKOE (Somewhat bold leaf; indifferent liquor)	... 5½d	5½d	6¼d	5

Java. The 1,298 packages were all of direct import, and consisted mainly of Teas from the "Sinagar Estate." No change was noticeable in the market, the Teas being mostly sold in the room with fair competition. 10,234 packages are to be offered in Amsterdam on the 21st inst.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

OL. II.]

COONOOR, SATURDAY, AUGUST 14, 1897.

[No. 20.]

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ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

MANAGER'S NOTICE.

Back Numbers: A few odd *Back Numbers* offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs. 3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs. 3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 20th August 1897.

S. E. Wynaad. PUNDALORE, 11th August.—*Weather.*—Since my last report there is no change in the weather. Constant rains are still overflowing the paddy fields. On the 9th, 10th and 11th instant we had the heaviest showers, followed by strong wind. *Crop.*—The transplanting of paddy is still being prevented by the excess rains. Provisions are selling very dear and affecting us greatly. *Labour.*—Plenty. *Health.*—Very good.

Coorg. PULLI BETTA, 11th August.—*Weather.*—Heavy rain started on the 5th with 1.50 inches. It kept going strong till yesterday. On the 8th the fall was 3.50 inches, and on the 10th, 2.60 inches. The remaining days after the 5th, it was much over an inch. A lighter state of affairs set in to-day. *Plant-diseases.*—A good bit of leaf rot about. Hardly any leaf disease showing up yet. Coffee still looking very fine. *Public health.*—Much the same as already reported. *Labour.*—Coming in slowly, but estates fairly well supplied on the whole.

Nellampathy. 11th August.—Rain for week, 22.97; to date for year, 126.27. A very heavy burst set in on Thursday and has continued right on to to-day, when it seems a little milder. The record day was reached for this end on Monday, when over 7 inches were measured. Work has been hindered dreadfully, as on such days as coolies did turn out, they stood shivering and did very little work, but on some days no one was out at all, which on these occasions is the cheaper way of working, I think. My rainfall, it will be observed, is somewhat larger than it used to be, but this is more the fault of the rain-gauge I had than of the weather. I have got a proper gauge now, however. *Plant-diseases.*—Still a lot of leaf-disease showing, and it would seem more is appearing every day. Borer, too, is at work here and there, but not badly. *General Health.*—Fair. *Labour.*—Plentiful, 'Mops' coming in rapidly again.

Nilgiris. SHOLUR, 10th August.—My pen was hardly dry from writing the last report, when the weather changed, for it has been blowing hard and raining without cessation ever since, rainfall during August to

date being 5.29, making 32.44 for the year. Temperature 46° and 59°. *Labour*.—Plentiful. *Health*.—Good. Prices of grains still high, and wind too high for tea to flush well.

COONNOOR, 11th August.—We have had a most unusual amount of rain this month, making up for what we ought to have got in July. The rain is most welcome to coffee, as the long drought was drying up the young berries. Leaf-disease markedly to the fore. Tea almost stopped flushing. Black bug spreading gradually. Red spider very bad; flush worm simply awful. *Health*.—Indifferent. *Labour*.—Ample.

KOTAGIRI, 12th August.—Weather in July: 19 wet days aggregating 3.54 for the month and 27.80 to end of July. August so far good. Monsoon current still strong, 9 wet days out of 12 aggregating 2.94 already; nice rains for ripening crop and for planting. Not many new clearings this side, but Kil-Kotagiri going strong in new land, and failures being replanted everywhere.

GENERAL NOTES AND ARTICLES.

THE ANNUAL MEETING OF THE UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA.

THE Secretary's report for 1896-97 and the Agenda paper laid on the table on the opening day of the Annual Meeting of the U. P. A. S. I. showed that the proceedings were likely to be of unusual interest and importance. Several new subjects were subsequently added to the Agenda, and these served to call attention to the strong leaning that planters now manifest towards the *practical* side of progress. They are not content to theorise, they wish to remedy past errors and to introduce improvements that shall place their industry in the front rank of modern advancement. They have had to "put their house in order," revise their rules, frame a new financial policy and provide for the welfare of the Central Association to which they already owe much, and from whom they expect so much more. Side by side with this, they have had to consider and remark upon the report of the South of India Planters' Enquiry Committee and to record what has already been done with respect to the Labour Question, coffee-stealing and sundry fiscal and other matters of varying importance. But what was brought most prominently forward at this year's meeting was the urgent necessity for practical improvements. Great as is the need of planters in respect to the Labour laws, &c., it is felt by coffee-planters that unless they take immediate steps to protect their property, any reforms of the law, any advantages that might be derivable under more favourable circumstances from the possession of well-filled coffers, may come too late; for in the meantime insect-pests of sorts are playing havoc with plants and crops. The subject of Scientific Investigation thus assumed a quite exceptional prominence, and the plain words of Mr. Cameron, the well-known custodian of the botanical gardens at Bangalore, who attended by request, will no doubt tend to make planters give increasing attention to high culture, to practical experiment, to careful examination and analysis of soils and manures, and to further investigation of diseases and pests, and probable remedies.

This, then, is the chief characteristic of the annual proceedings in August 1897: that a distinct bias towards practical experiment and work was shown: a bias which, we venture to say, will become more and more marked as the years roll by, and planters realise how much they had to "un-

learn," how much they have still to learn. It is an advanced stage in education when a man who has hitherto prided himself on his mental requirements finds how little he really knows. Many planters have reached this stage, and the remarks of Mr. J. A. Harris about the stupendous folly and ignorance that they had manifested in the past evoked approval that showed that the delegates assembled had no shame, but were prepared to acknowledge how much they are still to be learnt. They have educated themselves as to the Government, but both have still a great deal to learn. It is something to know that both planters and Government seem to have realised this, and that both show indication to remedy their deficiencies. The report that will be published elsewhere will, when carefully read, bring some illustrations of these remarks to light. We do not propose to comment upon it in detail or to summarise even the conclusions arrived at or the discussions that led to them. Planters who are not sufficiently interested to read the report, would gain nothing by having the perfunctory food of a summarised review administered to them. They must assimilate the whole of the proceedings, or at least be content to stand aside and let their more progressive brethren forge ahead. For our own part, we cordially endorse the general approval of the report of the S. I. P. E. C. which is reflected in the Association's hearty vote of thanks to the Commissioners. No more admirable piece of work has been done with respect to the planting industry. We endorse also every remark made in favour of further scientific investigation, the gropings of the amateur as well as those of the expert—for at best both are usually but groping in the dark. We concur also in what was said about the analysis of soils, &c., but we fear a wrong line has been taken with respect to the adulteration of manures. It is too probable that, even were an expert employed to analyse manufacturer's samples, manufacturers in India, *à fortiori* those in Europe, would refuse to guarantee delivery of equal to either their own analyses or those of the Association's chemist. By encouraging manufacturers who give no fair play, and by discouraging and trying to avoid all who may be even suspected of deliberately palming off inferior to sample, planters will safeguard their interests more effectually than any chemist could hope to do, and his decision was unhesitatingly accepted by suppliers as well as by buyers.

For the present we need add but little to our comments on the proceedings. It would be preferable that the proceedings themselves should be diligently studied by the planters. We may, however, remark that the U. P. A. S. I. has now formally recognized a section—to be called the U. P. A. S. I. section—of this paper as its medium of communication with the various District Associations and with individual planters. From time to time, therefore, U. P. A. S. I. circulars and correspondence will appear in these columns, in a section under the control of the U. P. A. itself. To us, this is an important matter, and an experiment the result of which will be of interest to others besides ourselves. We thank the Association for the qualified support and approval that it has agreed to give to *Planting Opinion*, and shall strive to make this paper follow the excellent example of the U. P. A. S. I. proceedings, by becoming more and more interesting and useful. At the least, we may fairly hope to do something towards creating an interest in the U. P. A. S. I. in some quarters.

where at present there is none, and towards stimulating such as already exists. For our own part we regard the proceedings of the Annual Meeting of the U. P. A. S. I. in 1897 as crowning a year's excellent work, and affording a great incentive to further endeavour and still harder work in the year 1897-98.

A defective rain-gauge.

Our Nellampathy correspondent asks us to put in a paragraph about the figures given by him of the local rainfall. He states the rain-gauge used was purchased from a well-known Calcutta firm. To satisfy certain doubts of its correctness, he wrote to the Madras Observatory, who informed him that, with the diameter given, 1 oz. of water should show 9 cents and not $6\frac{1}{4}$ as stated by the firm in question. This culpable mistake of the vendors of the rain-gauge resulted in the total rainfall being measured as 66.22 instead of 103.30, the correct figure.

Red ants.

At low elevations red ants are often a very great nuisance to coolies, as they make their nests among coffee or tea bushes alike, and being extremely fierce, give the unhappy cooly a very lively time. There are various ways of getting rid of them, one being to burn out the nests, another to drop a few grains of arsenic into the nests from above. In a Ceylon exchange, however, we note that some planters actually encourage them. One of them does this by providing himself, when going a jungle walk, with a long stick with a piece of meat attached. This he thrusts into any nest he finds and takes back the ants attached to his plantation, where they straightway form nests.

U. P. A. S. I. LEAVES.

[GATHERED BY THE SECRETARY, U. P. A. S. I.]

THE Annual Meeting has come to an end, and delegates have already begun to wend their way back to their respective estates. The attendance was not large, but it was decidedly a strong body of men that met this year to discuss the important report of the S. I. P. E. C., the financial question, and the grave subjects of leaf disease and insect pests. The report is hopeful; the financial position, though it might certainly be better, is not unsatisfactory, but leaf disease and the green bug are the shadows of the picture, and they have been laid on with no unsparing hand. There can be no doubt that they call for the most earnest attention of all coffee-planters, and tea-planters will doubtless stand by their brethren of the berry, knowing that every plant has its day, and that a time *may* come &c. Let the rest be left to the imagination.

Considering the amount of work done, the meeting was a short one. Its influence is likely to be enduring, however, for important matters will now have to come before the District Associations for full consideration.

The names of those present and the general tenor of the debates will be given by the Editor elsewhere. I need only add that the Planters' Dinner, held at the Club on 9th inst., was a very successful affair. It was wisely decided that there should be no speeches, and 'The Queen' and 'The Planters' were the only toasts. There was a very wel-

come sprinkling of non-delegates, and the diners numbered 28 in all. Mr. Romilly, the Chairman of the U. P. A. S. I. for 1897-98, was, of course, in the chair.

THINGS NOT GENERALLY KNOWN.

So much has been read of the lady-bird in the columns of our Indian papers, that anything throwing further light on the subject will no doubt be very welcome to people interested in the question.

It is not the lady-bird herself which destroys the scale, but her voracious progeny, which like all young and growing creatures, is simply insatiable. This can be proved by anyone with a little patience, watching a family group; the parents will take an hour over a single scale, and seem to have dined with the disappearance of it. "You are on the wrong tack" said a friend who had lately arrived in this country, "it is the new birds, the young ones, that eat scale and bug in quantity."

With birds it is the same thing; not the old birds, but the earlier fledglings devour the millions of grubs that are so destructive to vegetation.

It is a thousand pities that we have no Act protecting birds in India, and especially on the hills, where thousands are wantonly and cruelly destroyed.

Of course they are mischievous, too, but that can be overcome, without their being bird limed or shot; both ways are cruel.

A good way to keep them off fruit is to get several balls of fine tacking cotton (cheap stuff) and weave it to and fro between the branches of fruit trees or in front of your rows of peas. Once the birds get a fright by being entangled, they give your garden a wide berth. After innumerable experiments and endless expense, this way has been found perfectly successful by a well-known grower of fruit on the hills.

Here is another thing not generally known, and many a planter has bewailed the loss entailed, by discovering too late, that his nutmeg estate contains an immense number of male trees, which are of course perfectly useless. A case in point goes far to prove that a failure of the above kind can be remedied, and in such a way as to entail next to no loss.

A large nutmeg planter was relating his experience to a well-known Forest Officer (now, alas! dead) who was remarkable for his resources. The planter went on to say there was nothing for it but to cut out every male tree, and lose more than two-thirds of the estate.

"On no account," said the Forest Officer, "don't dream of anything so destructive and wasteful; take my advice, graft with female scions, and let me know the result." The planter's face brightened and he thanked him warmly, and in due course wrote, saying the experiment had turned out most admirably, and the greatest success had followed, and added, "you have saved me thousands of rupees and time by your practical knowledge."

FLEAS AND THEIR TRANSFORMATION.

"KEATING'S POWDER" is, we know, said to be an insecticide of the first degree, but one needs pounds of it to meet with

the requirement of the present plague of fleas that seem to have sprung out of the dust of the ground.

One begins to doubt if there is a "lesser flea" to annoy him as we are annoyed. In some houses in Ooty the insects simply swarm; a disused godown is often a favourite breeding ground. You may go in, clothed in white, and come out with a dark brown-looking garment on that moves ever upward. Where do they come from? and from what are they evolved? have they any enemies? Now why should this be: some day we shall be inoculated and rendered proof, for fleas have their likes and dislikes and they detest some people, and avoid them as mosquitos do.

Wormwood is an abomination to our apterous enemies, but it does not grow in the station, though acres of it may be found in the Badaga fallow fields.

The varieties of fleas are many. The porcupine and rat have a species peculiar to themselves, most loathsome to behold; large yellowish brown, fat bodied insects; luckily these keep to themselves, for one wonders how one escapes the rat flea when the rodents scamper all over the house; perhaps the wild flea is the house flea. The Bazaar chicken is generally the introducer, and sharp domestics at once apply a finger dipped in castor oil around the eyelids and wattles or comb. A flea can't abide oil, and a smear of it cuts off his respiration, and he may die of "poisonous perspiration" (small though he is) according to the article in a leading paper the other day (not about fleas).

If this world is one of correspondences, then surely is the flea the Kangaroo of the insect world; it would be far more satisfactory if he could bark and not bite; no one would mind his noise; but his bite is truly horrible to some people who suffer as much as others from a bee sting; and after careful watching one comes to the conclusion that they seem so far to be immune from native enemies. Of course dogs and cats crack their bodies between their teeth when they feel the creatures biting them, and their bodies can be picked off a mat showing the death they have died. Human beings don't exactly care to do this. Monkeys and savages are rather given to the practice, and the *black Todas* of Ooty don't seem to have any other way. But like the old Lady-bird and her scaly dinner the process is tedious, and certainly will not help to keep down the swarms that infest our mountain home at present.

Like the Japanese we shall have to sew ourselves up in huge linen bags tied securely round the neck, and round that exposed part you draw a magic circle of oil. Of course the fleas will hop or skip it, and land on your head, that is to be expected. You must sacrifice some part of your person.

It is difficult to know how to deal with such minute enemies so well versed in the art of self-preservation. You try to catch a flea, say on a wide expanse of bed sheet; he skips, and disappears, and you will find he marked the darkest shade for his landing place, either a corner, or a garment or a stripe on your blanket.

The wild sweet flag and garden mint the flea dislikes, and a good plan is to powder the leaves or crush into a paste and rub over your mats, but don't have the stuff wet, or it will stain horribly. Dogs suffer dreadfully and almost die from depletion of blood. Kittens do die straight off; their tiny bodies cannot stand the drain.

The poultry flea is another species altogether, more like a tick in habit, and his bite is sharper a thousandfold; a tab with a hot needle dipped in acid is about the sort of

pain experienced when a foul flea fixes on to you, and comes to stay indefinitely, his visit lasting several weeks sometimes, and a visit to the poultry yard is often purgative in the flea season thriving in his surroundings; any way a civilized insect is not so disgusting to behold.

If people would have the eggs burnt the multitudes might be kept down; the eggs sink in carpets and can be shaken out; but it must be done in three days at least or they hatch and the tiny larva soon attach themselves in the shape of miniature cocoons to woollen rugs, etc. On examination the creature will be found to be like a caterpillar, rolled in a silken case. When it is first hatched it is very small, soon begin to skip and look about for food.

LETTERS TO THE EDITOR.

NOTICE TO CORRESPONDENTS.

["MINE, BANKIPUR." Yes, notes on Deer shooting duly received many thanks. We are waiting an opportunity to put them in, but space is small and our Business Manager inexorable. Wish you best luck in new billet. "BUTTER COY." All success to your venture: think it will come out well all round. "BUG." Your powders received with thanks, experiments will be made if possible. We should advise, however, in order to ensure thorough trial, your placing at the disposal of the planting paper free samples of your remedies. If the results prove satisfactory, no doubt a large demand will arise. We may mention that it is quite impossible to experiment exhaustively with the tiny quantities sent. "YER R. G." Your complaint is unluckily no new one. But if you care to examine any recent copy of this paper, you will see that the advertisements are so placed that they in no way interfere with the proper filing of the paper. In other words, that not being "paged," and having both sides of the sheet occupied with advertisements, they can be easily and safely removed. Though on the other hand we have been assured that readers find the advertisements of great convenience as current lists.—Ed.]

A CORRECTION.

DEAR SIR,—There are three mistakes in my letter of 10th ult; would you kindly insert a note correcting them.

In the 10th line a sentence begins "on my return"; in the word printed "more" should be "worse", and the last word should be "nor has it since." My surroundings, too, are "parkly" but "paddy lands." Apologizing for the trouble

I am, Yours faithfully,

JNO. G. HAMILL

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contain the following per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Orders should be booked early for the coming crop of seedlings of the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere else than from the MANAGER, ARIENKOW ESTATE.

COFFEE.

The Coffee Duty.

One of our correspondents suggests action by the U. P. A. to secure the repeal of the Coffee Duty in England. He writes: "It is such a small duty and brings in very little to the Government."

ent and would free our article for the breakfast table. I think if ere would be some chance of its repeal if pressed on the Govern- ent, as there is no duty collected which is so expensive for them collect, the expense is out of all proportion to the return. All the fee landed in England is landed in Bond under the supervision of e customs officials. I don't know what amount of coffee bonded home goes into home consumption. Is it 10%? All the rest is ported and transhipped in Bond; so the Customs have to deal th the whole amount, and collect duty on about 10%.

"The benefit to the Planter would be a great reduction in warehouse arges, for with the repeal of the duty coffee could be handled as sily, and there is no reason it should not be done as cheaply as tton or any other duty free commodity."

Market.

There has been some improvement in the demand, says the *P. M. Review*

the 17th ult. :—

Prices on the terminal market have steadily advanced, although Tuesday there was a slight reaction caused by an estimate of the ext Santos crop, which was put at 4,000,000 bags. The low prices ye, however, again attracted more attention, and, with a decided nness on the part of merchants in Brazil, quotations close at an vance of about 1s per cwt. above last week. The auctions have en very poorly supplied, and have contained little beyond olombian and Guatemala descriptions. These have sold at steady ices, and occasionally rather dearer, but, even at the advance, ere are some cheap parcels offering at from 65s to 75s. Really eful home-trade sorts of the finer grades are becoming scarce, and any importers are withdrawing these Coffees until the autumn, hen there is generally some improvement in the demand.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended July 10, 1897.	Tons. 320	Tons. 287	Tons. 416	Tons. 367	Tons. 14,233	Tons. 11,179
For the 27 weeks ended July 10, 1897.	7,858	8,021	11,214	12,611	...	...

Troubles of Brazil planters.

Some patriotic British planters may feel an unholy joy in reading of the troubles that attend coffee in

Brazil, despite their huge crops, says the *H. and C. Mail* :

"A conference of representatives of the coffee-planting interest was recently held at Rio de Janeiro to consider the depressed condition of the coffee-planting industry in the provinces of Rio de Janeiro and San Paulo Santos), the chief producing districts. Details of the discussion indicate that the general conclusion arrived at was that one of the chief causes of the depression had been the excessive production this year, which, it was argued, had driven coffee prices down to an unprecedentedly low level. Another cause was said to be the fact that labour had become much dearer than formerly. Moreover, the planters are now compelled to part with their coffee as soon as it is harvested, in order to provide for current expenses and to cover advances already obtained from the commission-houses. They are thus brought to a state of financial dependence on the middlemen, by whom the prices of the coffee are practically fixed, without regard to the producers who are helpless in the matter. As remedies, an improved organisation of credit facilities and the erection of ware-houses, in which the coffee may be stored instead of being pressed for sale, were recommended."

COFFEE LEAF DISEASE IN JAVA.

II.

In a former issue we gave some account of Dr. Burck's investigation into the great coffee scourge, leaf disease. Although happily leaf disease has not yet, and we hope, never will appear in this Protectorate, yet on this subject all planters will read the result of such experiments as those of Dr. Burck with interest as they often give valuable hints on preventative measures and cultivation generally.

In continuation of the former paragraphs we now give Dr. Burck's summary and also the remarks of the Editor of the *Agricultural Bulletin of the Malay Peninsula* on the whole investigation.

SUMMARY.

Any planter can keep his nurseries free of disease at a little expense by sprinkling them with tobacco water and so start the plants in life in a healthy state. Young plantations can be similarly treated and any spots arising from insufficient wetting of the leaf can be cut out with the scissors or burnt out with sulphuric acid as described above. In fruiting plantations heavy attacks can be prevented by enclosing the gardens by hedges which can be composed either of coffee trees kept free of disease by tobacco water, or of arnotto or some such shrub, Teosinte grass or of trellises with creepers. If these attempts to arrest and prevent the disease are carried out by all cultivators, it is by no means improbable that the disease will be so reduced that it can never form any obstacle to culture, and loss from it will always be a negligible quantity.

NOTES ON THE FOREGOING.

The abstract of Dr. Burck's works I have made is very much condensed from the original. The substance has, however, been reproduced, but I have omitted portions which have no bearing upon cultivation in the Straits Settlements. The whole system of cultivation differs considerably in the two countries. In the first place the seasons are entirely different; here are no distinctly wet or dry seasons but on the whole the seasons are uniform. Again Liberian coffee has alone proved successful here and the damage wrought by the disease is much less with this species than with Arabian coffee. From latest advices, however (1891), we gather that the Arabian coffee in Java seems to be dying down, and slowly but steadily succumbing to the disease. If so, it is much to be feared that Arabian coffee will ere long be absent from our markets, as Java produces the largest quantity next to Brazil.

Another distinction is in the soil upon which the coffee here has to be grown. Java is a volcanic region and volcanic soil is far more suitable for the cultivation of coffee, as well as for several other cultures, than the so-called laterite of which the greater part of the Peninsula consists.

At the same time any light thrown upon the habits and requirements of the fungus is of great value, and Dr. Burck's suggestions seem to me to possess, even for the cultivation of Liberian coffee here, a great deal of value and importance. All who have seen a view of the coffee fields in Ceylon must have noticed the entire absence of any hedges or jungle breaking up the enormous tracts of coffee cultivation. The ground is, it is true, very undulating and hilly, but there is no attempt made to separate the fields at all by hedges. The whole country is open to the sweep of the prevailing wind to carry the fungus spores from end to end of the island, and indeed the undulating nature of the ground is in favour of the spread of the disease. Professor Marshall Ward, when he was investigating the disease in Ceylon, pointed out this very thing, and urged the formation of hedges. It is not probable that this simple method would have so far arrested the disease as to save the now ruined cultivation in Ceylon, but it would, doubtless, have lessened the violence and rapidity of the attack, and given some chance of combating the disease, by breaking up the whole into more manageable plots. It must be remembered that it is very rare to find any one species of plant growing in masses together unmixed with any other, in a natural state. The effect is somewhat like that of herding many animals of one kind together in the same space. However for crops such as coffee it is essential to do this. They are required to be grown under unnatural conditions, but as this is unavoidable, it is still possible to break up the plantation at least to a small extent by having belts of jungle here and there running through the plantations. The quantity of coffee lost by not putting these belts under cultivation is trifling compared with the advantage to be derived from them. These belts will arrest the spread of fungus spores and blight. They will also be of signal use in

attracting the insectivorous birds which will aid to keep down the insects that injure the coffee, and they will also be useful as supplies of sticks, poles, etc., required from time to time in the plantations. It is of course possible that monkeys and musangs will resort to these jungle patches, and sally forth at night to devour the coffee, but they are tolerably easily kept down in small woods, and it is usually when there is extensive forest near the plantation that they are so injurious. Where the jungle has been destroyed and where there are no bushes to make screens, I would suggest the planting of such trees as *Adenanthera Pavonina*, *Saman*, *Tombusu*, *Erythrinas*, *Jack trees*, etc., in thick rows, so as to break up the plantations. Nor would I restrict the use of jungle belts to the cultivation of coffee only. With all crops cultivated here on a large scale, I think it would be advisable to break up the plantations, if possible. It may be that with some cultivation no enemy worth considering is yet known, but no plant is entirely free from enemies either fungul or insectal, and although it may seem strange to say that a small jungle belt can and will act as defence against strong winged insects, yet such is the case, for the insects when they rise in the air high enough to clear the jungle, are very liable to be borne far away over the plantation, and if even they do invade the plantation they come but a few at a time and can be easily dealt with.—*Central African Planter*.

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.,

(SOMETIME AGRICULTURAL CHEMIST IN COORG, SOUTH INDIA,
TO MESSRS. MATHESON AND CO.)

(Reprinted from the "Madras Mail.")

NOTE.—These papers are being published in pamphlet form: register orders with Messrs. Addison & Co., Mount Road, Madras.

VII.

THE LEAF DISEASE OF COFFEE.

COFFEE leaf-disease, *Hemeleia vastatrix*, has produced such dire effects on the coffee of Ceylon and Southern India that a brief outline of the leaf history of this deadly parasitic fungus will probably prove interesting. Those who wish for fuller information should take the trouble to read Mr. Morris's and Mr. Marshall Ward's reports. I have carefully gone over the ground traversed by the latter gentleman, and can fully corroborate his statements. When a field of coffee is attacked by the disease, the bright glossy green of the leaves is changed to a dull yellow, and on examination the under-surface of the leaves is seen to be covered more or less with an orange coloured powder. This powder is composed of myriads of spores of the fungus *Hemeleia vastatrix*. One of these spores, sown on the underside of a leaf of a tree, if the conditions of light, heat, moisture, and texture of the epidermis be suitable, will in ten to twenty hours germinate, and penetrate the stoma of the leaf. If the medium on which it is planted prove unsuitable, it dies or may remain inert for months. On a coffee leaf of the Arabian species, after germination, in from three to five days, a mycelium or filamentous growth is formed, consisting of microscopic tubes. When these have absorbed all the food contained in the cell in which they were first formed, sucking organs are developed, which penetrate the neighbouring cell walls feeding on the juices of the plant. As the cell's contents are removed and taken up by the fungus, so the mycelium extends, pushing its suckers into the surrounding tissues. When the cells are emptied a yellowish spot appears, generally visible about two to three days after the parent spore is planted. The rust patch is formed in about two to four days after the appearance of the yellow spot as a rule, when the conditions are favourable. If the weather is unfavourable, or the medium on which the spore was sown unsuitable, the development is greatly retarded and a yellow spot may show on a leaf for two or three weeks before any spores are shed; or they may not form at all.

The rust patch is formed when the spores are forced through the stomata. As the mycelium spreads and increases in size, more spores are developed, and the patch of rust grows larger, radiating from a central point. As the work of destruction is carried on within the leaf by the mycelium, quite evident that remedies applied after the spores appear on the epidermis of the leaf are useless; they must destroy the tissues to reach the foe within. Any agent to be of use must be on the leaf before the spore finds a resting place. When experimenting on the development of the spores on a coffee leaf, I took a clean seed and raised it in a case prepared on Tyndell's method, with the result that I got a plant free from disease growing in sterilised soil. The spores only appeared where planted on the leaf, nowhere else, and Mr. Marshall Ward's results were fully borne out. Thus the disease is constitutional; the spore of the parasite must be deposited on the leaf before the disease can appear. A weak tree suffers more than a strong one from the loss of its leaves. A tree weakened by injury to its roots, due to removal of the surface soil by wash, digging, or other causes, recovers less rapidly, and if the attack of leaf-disease, or succession of attacks, be virulent, it will in all probability succumb. The lower vitality of the tree attacked the smaller its chance of recovery. A half-starved coolie readily falls a victim to fever, cholera, &c., while if well fed he more easily resists the attack of disease. So it is with the coffee tree.

The conditions most favourable to the development of the spores are a close, steamy, hot, stagnant atmosphere, and subdued light. Heavy dews followed by hot days, if a shade is over the coffee, aid in the fructification of the fungus. As a rule leaf-disease is bad in South Coorg twice a year, after the early rains, and during the autumn showers. In hot weather estates are practically free from it, though I have found the disease spots and rust patches in every month of the year. Shade, under which the coffee of South Coorg is grown, affects the disease in certain ways. It acts as a wind shield and retards the passage of the spores from one estate to another. If the coffee is one continuous sheet, the disease may start at one corner of the estate and roll right over it when the conditions are favourable. I have visited an estate on the 1st of the month, when leaf-disease was to be seen, though to any extent; fourteen days afterwards the estate was rid of it from end to end; by the end of the month it had resumed its appearance presented at the beginning. This estate suffers from these periodical attacks, which always began at one corner and swept over the estate in regular progression. Further examination showed that it was not the only estate affected in this way, and in every case the starting point of the attack was where the shade was thick, with damp and sour ground. The air was, especially in the early morning, laden with moisture, with often not a breath of wind. As the sun rose the possible conditions for the development of the fungus came into play. Here shade did more harm than good. Being too thick it prevented the free admission of light, conserved the moisture to an undesirable extent, and aided greatly in the production of the moist heat essential for the germination of the spores. Under the circumstances, the course to be pursued was first to render the conditions unsuitable to the fungus by regular removal of the shade and draining the land, then to apply the remedies. The reason why the lower leaves of the tree suffer most is that the great resting place of the spores is on the ground, on dead and dying leaves resting thereon. The coolies pick up the spores and dust as they walk through the coffee, and the spores find a resting place on the lowest leaves. These are shaded by the upper branches, and intercept the moisture evaporated from the ground, so that in general there are not only more spores on the lower leaves, but the closer they are to the ground the more favourable the conditions are for their development. Unless the ground and the

es are treated, to say nothing of the neighbouring estates, it will be impossible to eradicate leaf-disease. But an estate can be kept practically clear of the pest by one application to the ground and two to the leaves per annum. In France remedies are applied to the vine four times per annum with great success. The work is not expensive, only labour must be there to do it at the right time.

The *Hemeleia vastatrix*, or a fungus so closely allied to it that I can see no difference between them, is to be found on at least three jungle trees. Unfortunately I know next to nothing of any, so cannot classify them. It was on the goni (*Ficus zorencus*?) that I first found the spores; whether these are a first sort of spore or the second sort of spore which prefers another pest, I am not sufficiently well up in cryptogamy to determine, but the spores taken from the goni and sown on the coffee leaf developed there.

I had a few failures in transferring the spores from the coffee to the goni, but on the whole results were satisfactory. The *Ficus* *globurata*, when a young plant was taken, could also be infected. If the leaves are old, the yellow spots will show on the leaf with but very few spores being formed. Liberian coffee, which has a much tougher leaf than the Arabian, displays much the same characteristics as the atty and goni.

The damage done by the *Hemeleia vastatrix* is entirely that of depriving the tree of its leaves. You can make a coffee tree look by varnishing its leaves on the under-surface and so preventing its breathing. Consequently, in selecting a remedy there must be taken that it does not clog up the spores of the epidermis. It would do more harm than good. Stripping the tree of the diseased leaves ranks in the same category. A tree must have its leaves, which are its lungs, in good order, or it cannot develop its fruit. If all the blossom that appears really sets crops of from five to ten tons per acre would be common. As a matter of fact, only from one or two to ten per cent. set, and of that does not come on. Now the true use of a manure is to enable the crop to set its blossom, and to assist in the development of a healthy bean. My experimental plots being systematically manured were able to set a larger proportion of the blossom than the estates, though both received the same work, the only difference being in the manures and manuring. Though pruned and handled down to the level of the estates they had a finer show of leaf and wood, and recovered from an attack of leaf-disease more rapidly. The results from the estate where leaf disease was worst, taking the crop of 1887 to 1888 as the basis, and stating results as percentages on that, for both plots and estate, we get the following result:—

	1887 to '88	1888 to '89	1889 to '90	1890 to '91.
Estate	100	63.1	34.2	8.5
Plot	100	90.9	239.5	36.3

This shows the value of steady systematic manuring broadcast annually, and this year the plots have a splendid crop on them. It requires time, patience, and careful observation to get reliable results, and the results to be of value must form a series obtained by steady systematic work. Not knowing how the various manures would act on the coffee tree, I began with only mail plots of 3.200 trees, or rather the space occupied by that number when the estate was originally planted. Each manure acted on two plots of 100 trees each, and the results individually taken are not conclusive. Therefore I had to take for comparison the aggregate results, including good, bad, indifferent, and unmanured plots for comparison with estates, which in most cases did not receive the manures I recommended owing to failure of supply of fish and other causes.

Now, as to preventive measures. Steady systematic manuring annually holds the first place; drainage is in some cases quite as important; and the careful regulation of shade under the conditions under which the coffee is grown suitable to it and unsuitable to the fungus, then special remedies can be successfully applied. Six months ago I did not know how the

practical application of remedies was to be managed. Sponging the leaves over took from 15 to 20 minutes per tree, spraying with a syringe took from 5 to 10 minutes and was not thorough. Labouring under the difficulty, I did not consider that any practical good was to be gained till this point was settled; for, as Mr. Ward says, it is not the most difficult thing to find a substance to destroy the fungus, but it is somewhat difficult to comply with the other conditions laid down.

But I managed even that; and in February last two spray machines were sent out from England by Messrs. Matheson & Co. which fulfilled all the conditions necessary for practical work. All that is now required is to test the remedy and method of application on a wholesale scale. I have been engaged in practical work ever since I left school, and I can honestly say that leaf disease is preventible by practical measures if there is labour to carry through the work at the right time.

TEA.

Machine-made Chinas.

Various lots of the new season's make have arrived in London, and have sold at an appreciable advance over the old style of hand manufacture. But the quality is still a great deal below that which was expected to be attained by the use of machinery.

Profits of Tea Companies.

From the para. given below may be inferred the fact that the low elevation estates still give larger profits than the high elevation ones, despite the higher price gained by the latter, and the consequently larger margin of profit. It is all explained of course by the yield.

A summary of the returns shown to investors by ninety-four Indian and Ceylon tea companies appears in a financial contemporary, says the *H. & C. Mail*. The companies enumerated represent a total paid-up share capital of £7,261,635, on which last year a net profit of £719,426 was made, or an average return of 9.90 per cent. The Indian companies, the teas of which last year sold at an average price of 8½d. per pound, are represented by a capital of £4,730,523, and made last year a net profit of 9.45 per cent. The Ceylon teas, the average price of which in 1896 was 8½d. per pound, made a return of £272,229 on a capital of £2,531,112, or 10.75 per cent. It is further noted that the cheapest of the Ceylon teas, those which sold under the average of 8½d. per pound, were the most remunerative from the investor's point of view, giving a return of 12½ per cent., against 9.10 per cent. obtained from those selling above the average price, and against 11.62 per cent. made by the best class of Indian teas—those which realised an average of over 10½d. per pound.

The Market.

Says the *P. M. Review* of the 17th July:—

INDIAN TEAS.—The quantity brought forward has been small, the public sales only having comprised 7,600 packages, of which about 6,300 were new season's, and the remainder chiefly consisted of last season's "Calcutta-bought" parcels. There was a slight improvement in the demand, and the bidding was brisk for desirable Teas, although, taken as a whole, the quality was disappointing. There was a good demand for a few consignments of good liquoring Doors, and it is quite evident that the trade is in a position to buy freely as soon as desirable kinds are offered of improved quality and strength. Some very low-class Pekoes and Pekoe Souchongs were included in the sale, and for these there was little demand, and previous rates were barely maintained. Darjeelings were not plentiful, and, being again poor in character, brought but moderate rates. Fine and finest grades of all descriptions are particularly scarce, as there is only a limited stock either of Leaf or Broken kinds over 1s. and, consequently, the few fine invoices secured good prices. Judging from the catalogues already issued next week's

sale promises to be on a larger scale, and a better assortment of various descriptions may be looked for. At public auction 6,000 packages were sold, and 1,600 were withdrawn. Recent advices from Calcutta indicate the probability, owing to the earthquake, of some delay in the arrival here of part of the crop, especially from Darjeeling and Dooars, but only a slight deficiency in the out-turn is anticipated.

TEA MANURING.

WE have frequently noticed in our columns the interesting series of letters on this subject that appeared in the *Ceylon Observer*, which has been ably reviewed by that veteran adviser in chief to Ceylon, Mr. John Hughes. The following notes form the gist of his remarks, pressure on our space having forbidden their earlier appearance.

The first point, before commencing manuring, is to find out what the soil lacks, for it is certain that supplying certain costly plant food to soils rich in these ingredients is positive waste. With tea, the three most important elements needed are nitrogen, phosphoric acid and potash. Lime is not specially required. But whatever the system adopted, the only real test is by results, *i.e.*, whether it *pays*. And to find this out, it is of no use to reckon the gross value of the tea. Two hundred pounds of tea extra yield multiplied by the price realised does not represent the *net* value, for cost of picking, manufacture, packing and freight must all be deducted.

The two chief kinds of manures used are *bulky* and *concentrated*, erroneously called "artificial" by planters. The first consists of cattle dung and lime refuse; the latter of bones, fish and poonac. It is absurd to call the remains of animals and vegetable productions as artificial, nothing on the contrary can be more natural. These three concentrated manures are valuable according to their richness in phosphates of lime and nitrogen per 100 parts.

	Phosphates.	Nitrogen.
Bone meal ...	50 to 53	3½ to 4
Fish meal ...	14 to 18	6 to 7½
White castor ...	4 to 5	7 to 7½
Brown castor ...	3 to 4	4 to 4½

Bones are highly phosphetic; castor poonac highly nitrogenous, while fish occupies a middle position.

Manuring should be done regularly and in small quantity. If nitrogen only is required, well-crushed castor cake is the best. If phosphoric acid, so essential to quick flushes, use a mixture of bonemeal and superphosphates. If potash, the dominant mineral element in the leaf, use sulphate of potash. Nitrates should be avoided in Ceylon, because of the heavy rainfall which would wash them out of the soil. The best Ceylon soils contain as much as 50 in 100 parts of dry soil [as good as cattle manure.—Ed., "P. O."], while the poor contain only 10 per cent. And as every 10 per cent. represents in round numbers 2 tons per acre to the depth of one foot, soils may vary as above as much as from 2 tons to 10 tons.

The following table given by a planter relates to the effect of manure upon different plots of old coffee land 35 years' old now in tea:—

	Per acre.				
Before manuring ...	204lbs.	304lbs.	143lbs.	188lbs.	305lbs.
After manuring ...	425 "	726 "	310 "	317 "	637 "

The same writer adds that of the artificial manures used, castor cake and crushed bones gave the biggest increase. In the first flush and young leaf there is more potash and

phosphoric acid with but little lime; but this is reversed when the leaf gets older and coarser; 500lbs. Ceylon F. Souchong removes 441lbs. of organic matter and 291lbs. mineral matter. The organic comprises 19½lbs. nitrogen while the minerals include 11lbs. potash, 4lbs. phosphoric acid and 3lbs. lime. These figures indicate, says Mr. Hughes, the importance of a bulky organic matter containing about 4 per cent. of nitrogen and 5 per cent. of mineral matter. [To this we must take exception. The necessity for "bulk" is not proved in the slightest. It seems as if Mr. Hughes intended it to be believed that plants cannot form organic matter, or in other words grow at all, unless there is a corresponding amount of organic matter in the soil. The truer way of giving what we conceive may have been meaning would be that a perfect tea-manure should contain four parts of nitrogen to every five of minerals. Ed., "P. O."] Crushed oil cakes thus afford excellent manure. [How about the potash which they lack?—"P. O."] We may mention, in case any of our readers are desirous of consulting Mr. Hughes, that his Analytical Laboratory is at 79, Mark Lane, London, E. C.

THE UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA.

FIRST DAY.

(From the "Madras Mail.")

BANGALORE, 9th August.—The Fourth Annual General Meeting of the United Planters' Association opened to-day at the Cubbon Park at 11 A.M. There were present the following delegates:—

Central Travancore ...	G. L. Acworth.
Coorg ...	W. H. Sprott, A. Lambert, A. Boppana, C. E. Murray, Aynsley, H. G. Parsons.
Kanan Devan ...	Baron J. von Rosenberg.
Lower Pulneys ...	H. O. Newport.
Nelliampathis ...	J. C. Abbott, W. Morris.
Nilgiris ...	Hon. Mr. H. P. Hodgson, E. G. Windham.
N. Mysore ...	O. Scot-Skirving, F. S. Hay.
" Native ...	S. N. Chokanna, C. Vasudev Rao.
S. Mysore ...	Jno. G. Hamilton, J. A. Harris.
" Native ...	—
Shevaroyas ...	C. G. Lechler, H. W. Leeming.
Travancore ...	—
Wynaad ...	Geo. Romilly, J. W. Hockin.
North Wynaad ...	—

AGENDA.

1. Secretary's Report and Accounts.
2. Election of Office-bearers.
3. The Report of the South of India Planters' Enquiry Commission.
 - (a) The Labour Question.
 - (b) Coffee-stealing.
4. Coffee-stealing.
5. U. P. A. Finances:
 - (a) Method of raising funds.
 - (b) Partition of funds between Tea and Coffee.
 - (c) Reserve Fund.
 - (d) Reporter's Fee.
6. Registration of the Association.
7. Constitution of the Association.
 - (a) Revision of rules: (a) general, if Registration be decided (b) with special reference to the formation of the Committee.
8. The Casket and Address to the Queen.
9. Subscriptions in default.
10. Scientific Investigation.
11. Malaria.
12. References to the High Court under Act XIII. of 1895.

3. Employment of Counsel *re* Act XIII. of 1859.
4. Roads and Communications.
5. "Planting Opinion."

ADDED DURING THE MEETING.

6. Government Cinchona Bark.
7. Import Duty on Chemical Manures and Tea Seed.
8. Adulteration of Manures.
9. Commission charged on Currency Notes on the Shevaroy's.
10. Export Duty on Bones.
11. Closing of the Mints.
12. Reserve Fund.

The Chairman (Mr. G. L. Acworth) formally expressed the pleasure he gave him to open the Annual General Meeting.

The Hon'ble Mr. H. P. Hodgson moved and Mr. H. G. Parsons seconded that the Secretary's Report and the Accounts be taken as read. The motion was carried.

The procedure of all previous meetings was then confirmed, a formality which until the present occasion had been overlooked.

The Chairman then rose and addressed the meeting as follows:—

GENTLEMEN,—You have heard the Secretary's Report, and I think you will agree with me that during the past year our Executive have not been idle, but that much useful work has been done. The interest of District Associations in this, the head Association, continues to increase, a gratifying fact. But with the increase of interest comes an increase of work, and, to a certain extent, of responsibility, as my successor will find. It is true we have a Committee, whom your Chairman can and ought to consult on all important matters, but occasionally a case arises which must be settled off-hand and in regard to which it is impossible to communicate with a Committee, etc., scattered as is ours. It is in such matters that the Chairman must exercise his discretion and responsibility; and, in doing so, should he not meet the views of all, do not blame him. Whoever he may be, you may rest assured that the line he adopts will in his opinion be for the benefit of the greater number. There is another question, which to my mind falls within the province of the Chairman in consultation with the Secretary to decide. This is what circulars or other matters of general interest it is advisable or otherwise to publish in the Press. I mention this, as I myself was taken to task during the past year for exercising this responsibility, and, in spite of the criticisms passed on me, I still think I was right. Should this meeting differ with me, it will be well before we separate that you should define exactly what are and are not the Chairman's duties, but in my opinion he ought to have a perfectly free hand in this respect. Should it be necessary to consult the Committee on every occasion, so long a time will elapse before all opinions are received, that in nine cases out of ten the subject under reference will have lost a great part of its interest before it appears in print. Gentlemen, the past year has been a memorable one for us, for it has seen the production of the Report of the Committee of Enquiry, which you will shortly consider, and which for so many of us is so vital a matter. Our heartiest thanks are due to H. E. the Governor and the Government of Fort St. George for their courtesy and consideration in securing for us permission to discuss and criticise the Report. Our very cordial thanks are also due to His Honour Sir William Mackworth Young and his fellow Commissioners for the careful and exhaustive enquiry they held, and for the very able Report they have produced. The past year has also seen the birth of the Reserve Fund. May it grow and flourish! Our finances are certainly in a far more hopeful position than was the case a year since, but they are still capable of improvement, and it is earnestly to be hoped that at this meeting we shall come to a decision which will prove satisfactory to all and yet place us beyond anxiety for the future. Another matter for your consideration is the Registration of this Association, without which we apparently hold no legal status. Should you determine that Registration be advisable, it will probably be necessary to make a few alterations in our Rules. In conclusion, gentlemen, I thank you for the very high honour you have done me in appointing me your Chairman for the past year. I thank the Committee for the kindly consideration they have extended me, and, if the same hearty co-operation is accorded my successor, I can only say, that, though he may at times find his duties heavy, he will not find them unpleasant. It only remains for me to place my resignation in your hands, and to ask you to be good enough to fill in the balloting paper for the election of officers for the current year.

The Hon'ble Mr. H. P. Hodgson proposed a cordial vote of thanks to the outgoing Chairman. He thought all would acknowledge the active interest he had taken in the Association's affairs, and the tact and wisdom he had displayed in working out the matters of detail that had passed through his hands during the year. Personally he (Mr. Hodgson) could speak to the great assistance he had received from Mr. Acworth, and the sound advice and great sympathy and interest he displayed in all their business relations. He therefore proposed a hearty vote of thanks to Mr. Acworth and he was sure it would be endorsed not only by the delegates present, but by every member of every District Association in Southern India. (Cheers.)

Mr. G. L. Acworth in a few graceful words acknowledged the vote thus passed.

ELECTION OF OFFICE BEARERS.

The Election of Office-Bearers was then proceeded with, with the following result:—Chairman, Mr. George Romilly (unanimously); Vice-Chairman, Mr. H. G. Parrons; Secretary, Mr. H. Ormerod (unanimously). The newly elected Chairman acknowledged the honour that had been done him in the following terms:—

GENTLEMEN,—I naturally am proud of the honour you have done me in electing me as your Chairman for the ensuing year. Though the Association has made steady way since it was launched in 1894, I feel that its position is not yet absolutely secure, and in consequence I do not underrate my responsibilities. We have had a practical lesson during the past year of how much does depend on the Chairman, and it is with great diffidence that I venture to accept office as a successor to Mr. Acworth. He not only was able to address these meetings with ready eloquence, but he has carried on the business in the interim with an energy born of enthusiasm for his cause. If I fail to come up to his standard you must forgive me, but I shall do my best on your behalf, and I am glad to think that I have in our planting member a friend with whom it is always a pleasure to work.

Mr. G. L. Acworth then rose to propose that the Accounts of the Association should be audited by a professional auditor. He moved at the request of the Secretary.

The Chairman said there could be no question about the desirability of such a course, and the motion was unanimously adopted.

On the motion of Mr. G. L. Acworth, seconded by the Hon'ble Mr. H. P. Hodgson, the following were added to the Agenda Paper:—The Government Cinchona Bark Question, Export Duty on Bones, Duty on Chemical Manures, Adulteration of Manures, Currency Note Question on the Shevaroy's, and Closing of the Mints.

THE PLANTERS' ENQUIRY COMMITTEE REPORT.

The next subject on the Agenda Paper was the consideration of the above Report. At the request of the Government of Madras it was decided to hold the discussion entirely in Committee and the rest of the first sitting was occupied in discussing it.

On resuming the general meeting Mr. G. L. Acworth proposed a vote of thanks to the Commissioners in the following terms:—

GENTLEMEN,—Through the courtesy of the Chairman it is my great privilege to rise for the purpose of proposing a vote of thanks to H. H. Sir William Mackworth Young and his fellow Commissioners. Gentlemen, from this Report I anticipate the best of results, not merely from the Report itself, though nothing could be said too highly in its praise, but also from the character of the authors of the Report, the gentlemen selected respectively by the Government of India, and that of Fort St. George to conduct the Enquiry. Nobody who has had the good fortune to come in contact with Sir William either in his private or official capacity can fail to have been impressed with his exceptional ability, his exceptional industry, his exceptional suavity and courtesy. I cannot but feel that the Government of India must have realised the gravity of the situation, when they nominated such a gentleman President of the Commission of Enquiry, and the event has proved that through the length and breadth of India no more fitting person could have been found. Whatever may be the opinion of gentlemen as to the suitability of some of the suggestions embodied in the Report, there can be but one opinion as to the Report itself, and that is, that it is a monument of patient and thorough investigation, and as a history of our industry cannot fail to be of interest to any intelligent reader, whether a planter or otherwise. What I have said of the selection of the President of the Commission by the Government of India applies equally to that of Mr. Dumergue by the Government of Fort St. George. In Mr. Dumergue we had the good fortune to have a Commissioner who both in Travancore and Wynaad had come much in contact with planters, and knew

much of the ins and outs of our system of working. But that was not our only advantage, Mr. Dumergue can do nothing in a half-hearted manner. I speak of him after an intimate friendship of nearly twenty years, and I know well that he obeys the precept "whatsoever thy hand findeth to do, do it with thy might." In work or play Mr. Dumergue is a man of intense energy, and when to this are added his very great abilities, I am sure you will agree with me that no better appointment could have been made from the Madras Service. On Mr. Hockin's merits I fear it hardly becomes a planter to dilate, for he was our own nominee, and in eulogising him we may be thought to be beating our own drum and praising our own astuteness. But we must not forget that Mr. Hockin cheerfully gave up many months of his time to our service, exiling himself from his family and his work. Mr. Chairman, in the Report we have considered we have a record for all time, and the benefit conferred on the planting community by the labours of the Commission is so great that it is difficult to find words adequate to express the gratitude we feel. I propose, however, that the Secretary be instructed to convey to the three Commissioners in the most expressive manner the very heartiest thanks of this Association for the careful and exhaustive enquiry they held, for the consideration they showed for the convenience of the planters during the enquiry, and for the production of a Report, which as a history of the industry is admirable, and in its logical deductions therefrom a model.

The Hon'ble Mr. H. P. Hodgson seconded the vote. He said it was quite superfluous to say anything after what had fallen from Mr. Acworth. He quite agreed with Mr. Acworth when he said they could always look back on the Report, whatever happened, with pride, because it thoroughly proved that their agitation for the last 30 years was a right and just one and all that they claimed was what men of common sense and intelligence would have expected Government to have given in support of an industry so large as theirs. The motion was unanimously passed with acclamation.

Mr. J. W. Hockin, who was one of the Commissioners, acknowledged briefly and suitably the vote on behalf of himself and the other Commissioners.

COFFEE STEALING.

Mr. J. G. Hamilton (S. Mysore) moved "That a Sub-Committee consisting of the Chairman, Vice-Chairman, the Planting Member of Council, and two members (the mover and Mr. H. O. Newport) be appointed to consider the systems now in use for protecting coffee in transit and to prepare a system for universal adoption to be submitted to the meeting for approval."

The Hon'ble Mr. H. P. Hodgson seconded the proposition, which was carried. The Meeting at this stage adjourned for lunch.

FINANCES.

On re-assembling the question of Finances was discussed.

METHOD OF RAISING FUNDS.

Mr. G. L. Acworth opened the discussion on this subject. He said:—

MR. CHAIRMAN AND GENTLEMEN,—It may be a matter of surprise to you all, that I come forward with so moderate a financial scheme after my demand of last year. I would, however, wish you to understand, that necessity is the compelling motive, and that so far as I am concerned, my opinions have in no way altered. We have now actually formed the nucleus of a Reserve Fund, but my plans for the rapid accumulation thereof having been rejected, the next best thing is to endeavour to persuade you to do that slowly and quietly, which you decline to do with speed. I may be twitted with inconsistency as regards my suggested method of raising the money, for I last year, in the interests of the small proprietor, spoke against acreage assessments, but I have never pretended to be and never hope to be consistent. To come to my plans:—I propose abolishing the present method of subscription altogether, as also to reduce the value of votes, and in lieu thereof to levy a tax of one anna per acre, and to constitute every Rs.10 so raised a vote. Now I claim for this, that the value of the vote is so moderate as to enable the smallest and poorest Association to place itself on our roll, a very great advantage, when you consider that in the next few years new districts are likely to be opened up, that in such districts there will be heavy outlay and no returns for some years, and that it is only natural that in these cases young Associations should shrink from paying Rs.50 or Rs.75 for a vote, when they would be not unwilling to buy a vote or two at Rs.10 each. I claim this as a very great

advantage, for so long as there is one District Association represented on our list, we are not really and truly the "U. P. A." I claim secondly that the tax is so light a one, that no individual proprietor of an established concern, either small or large, will object to it. It has been argued that the tax will fall heavily on the landholder. This I cannot agree with and most emphatically. Surely everybody must be aware, that the tendency of the Association for small concerns of all kinds to amalgamate for the simple reason that by combination they can be worked more cheaply and efficiently and can show a better return than when standing alone. The fact which admits of no contradiction, and whether the large concerns be in the hands of a body of shareholders or in those of a single fortunate proprietor does not matter one jot. It has a great advantage over its small and neighbouring rival. But even were this the case, there is no compulsion on the large proprietor. He is merely to say, "I do not see my way to paying the whole of the assessment, but send you a moiety as a token of my support." Another objection has been, that large Associations, such as the Nilgiris and Mysore, will swamp the smaller ones. Of this I am not afraid, nor does my own Association, a small one, dread it. Our planters' interests are identical, whether we are members of small or large District Associations, and if we smaller ones do not afford to disregard the danger, surely the larger need not take it into consideration. And now I come to the vexed question of individual vote. Gentlemen, I claim that by adopting my proposal you do actually introduce it. Any District Association will be given perfect liberty to dispose of its votes to its private members in any way it pleases up to the value of its subscription without altering the constitution of this, the head association, which will still remain an Association of Associations. This question will therefore be settled at rest. Finally as regards our income. We ought under the scheme to raise between Rs.10,000 and Rs.15,000 a year. This would cover all our expenses, office and so on, and yet enable us to lay by a substantial sum annually to the Reserve. I am not at least anxious that this Reserve should be sat upon by the planters, as *Planting Opinion* recently expressed it, and should never be averse to its being usefully employed. But I think there is a tendency, a rather dangerous one, to invent methods of spending money simply because we have it. I must say I should like to see our Reserve a little larger before we dip into it to any considerable extent, and I consider we ought to ascertain our position very carefully, before we undertake to guarantee an annual subsidy for the employment of an expert for scientific investigation, or for any other cause. Personally, I would rather see this Association dissolve never to raise its head again than that the stigma of a broken plan should be fastened on the community. Mr. Chairman, my scheme is so simple a one as to make long explanation and argument needless, but I may mention that it has already been successfully attempted, and that it is on exactly the same lines as those of the Indian Tea Association, a body, the power and value of which all are readily acknowledge. Gentlemen, I thank you for the patient hearing you have given me, and will now put my Resolutions before the meeting. They are: (1) That the present method of subscription and voting be altogether abolished. (2) That an annual tax of one anna per acre be levied on each Association. (3) That a vote shall be held for every Rs.10 so raised. (4) That the rule relating to proxies shall hold good.

Mr. H. G. Parsons seconded Mr. Acworth's proposal. He said that it was perfectly evident to him that the individual members' scheme, which was so much associated with his name, had not the remotest chance of being adopted, though he was still of the opinion that it was an excellent method of raising funds. Mr. Acworth told them that according to his scheme individual members would be indirectly admitted and he felt certain that it would prove a very excellent measure. One great point in favour of the scheme was that it would enable each Association to raise funds in its own way. He thought it would be difficult, not to say undesirable, to say that because one Association found one way of raising funds for a certain object suitable to itself, that it should therefore seek to enforce that method on another Association. The object being to raise funds for the needs of this Association the objection to admit individual members, directly or indirectly, was more or less imaginary. At the rate he could never bring himself to agree to the whole of Mr. Acworth's scheme, and all that he asked was that it might be given a fair trial for 2 years; if at the end of that time the objections

ged held good, he would be the last person to advocate its continuance.

The Hon'ble Mr. Hodgson opposed the scheme and proposed an amendment to it in the following terms:—

GENTLEMEN,—I propose an amendment on Mr. Acworth's scheme which is now before the meeting. I do so primarily because the instructions from our Association do not allow us to support a scheme for raising funds of which individual membership, or voting power, forms a component part. It is the only point upon which our Association has not given us a free hand to exercise our judgment in matters before this meeting. This alone shows how divided the feeling against the principle is in our District. Personally I am in favour of individual membership with properly controlled voting power, but as I have said, I am bound in this respect to waive my own views and to act to orders, and in any case should never wish to see an important alteration in the constitution of the U. P. A. such as this would be, introduced by a small majority. Now, however, you may take it there can be no doubt that you accept Mr. Acworth's scheme as it is now before you, without reservation, you are admitting the principle of the individual vote. You allow the individual to *purchase a vote and use it* at our meetings. It makes no difference whether he purchases it through his District Association or from the U. P. A. direct. Nor does it alter the position if his vote is recorded through the appointed delegates of his Association instead of through the Chairman of the Meeting, *the individual vote is used* at the meeting to decide any question before it. Mr. Acworth's scheme as it stands, therefore, contains the elements of Individual Membership and on that score we are bound to oppose it. As we are hopeful, however, that by meeting with other in the various points of difference, we may be able to work out an amalgamation of a scheme which we have to put before the meeting, and which in its general principles has been adopted by an Association, we would prefer rather than to oppose Mr. Acworth's scheme *in toto*, to put an amendment to the effect that an amalgamation of Mr. Acworth's scheme and the one we are putting before you be effected and that the details of the amalgamation be considered in Committee. Before I can ask you to support this amendment I must state the various points which we propose should be amended, and in order to do so I will take the headings of Mr. Acworth's scheme as given in his circular dated the 9th of June, 1897, any of which you have all seen. (1) "That the present method of subscribing and voting be altogether abolished." We propose that the present method of voting, through a selected number of delegates, appointed by each Association, be adhered to. And in making this proposal we believe that we are in sympathy with the wishes of a large number of Associations, judging by the circulated proceedings of District Associations. (2) "That an annual tax of one anna per acre in cultivation be levied on each Association." Now with regard to this means of raising funds it may suit some Associations. I can say positively that it will not suit ours. According to Appendix 3 of the Report of the Enquiry Committee—the Nilgiri District is credited with a cultivated area of 37,381 acres, but of this area only 18,000 acres are at present represented by members of our Association, and of this area large blocks are held by certain proprietors who would not be willing to consent to an acreage assessment. Manifestly it would serve no useful purpose, nor would it benefit the finances of this Association, which is the object we have in view, to impose a system of raising funds which we know beforehand will not work, and will not be supported by the men who are to be asked to provide the money. We therefore propose that the subscriptions to the U. P. A. *should be on a fixed minimum*, the amount of such minimum to be according to the means of each Association, with a fixed maximum for all Associations. The minimum might be fixed at 20 per cent. of the average under cultivation assessed at 1 anna per acre and the maximum at the full 1 anna per acre. That every Association shall be obliged to subscribe its fixed minimum, with the option of purchasing votes (pay for every Rs.10 subscribed above its minimum) up to the maximum allowed. One very apparent advantage of the fixed minimum is that the U. P. A. would have an assured income at any rate amounting to the aggregate of the minimum subscriptions payable by the Associations on the rolls, whereas without such provision it could be within the power of any Association, however large, to say, this year we want our money ourselves. There is nothing of importance coming up this year, and we will only take say 2 or 3, 10 rupees votes—and the U. P. A. might find its funds seriously curtailed. By fixing the maximum at an approved sum, we limit the

purchasing power of every Association, and thus check a possibility, that some seem to fear, though I confess I do not, of a rich Association desiring to carry a certain Resolution, purchasing an overwhelming majority of votes in order to do so. (3) "That a vote shall be held for every Rs.10 so raised." This we can accept as it stands protected by the proposed amendment of clause 1. (4) That the rule relating to proxies shall hold good. We accept this. The above are the 4 clauses of Mr. Acworth's scheme, and I have dealt with each of them. With the modifications I have sketched out, the details of which can be worked out in Committee, I would suggest the insertion of a clause 5 to the effect that the subscription list for voluntary donations be kept open. I think we might elaborate a scheme which will meet the views of nearly every Association, or at any rate will go nearer to providing a means of raising funds suitable to all Districts, than anything we have arrived at yet. Having explained matters so far I will put the amendment, which is, "That an amalgamation of Mr. Acworth's scheme and the scheme proposed by the Nilgiri Delegates be worked out, and that this meeting go into Committee to discuss the details, and arrange an amended scheme to put before the general meeting."

Mr. J. A. Harris seconded Mr. Hodgson's amendment and agreed entirely that the scheme proposed was a great improvement on Mr. Acworth's proposal. He took exception, however, to one point in the amendment and that was the proposal to make the minimum according to the paying capabilities of each Association. He would prefer a definite minimum and maximum being fixed and it was possible that he and Mr. Hodgson could eventually meet this. The objection he had to Mr. Acworth's scheme as it stood was that it would depreciate the position of the delegates. In regard to Mr. Acworth's scheme he said it appeared to be a compromise between Mr. Parsons' scheme and the present system, but it was entirely marred by the introduction of the individual element. The U.P.A. was an Association of Associations and not of individual members, and it would interfere with the balance of voting power. He then proceeded at some length to exemplify how this would take place.

Mr. Hay (N. Mysore) supported Mr. Hodgson's amendment, being as he said of the same opinion as that expressed by Mr. Harris of S. Mysore.

Mr. O. Scot-Skirving also spoke in support of the amendment.

Baron von Rosenberg said he was instructed by his Association to support Mr. Acworth's scheme, but at the same time to oppose any scheme of individual membership, and as Mr. Acworth's scheme comprised individual membership, he announced his intention of supporting Mr. Hodgson's amendment.

Mr. Acworth was explaining, when he was ruled out of order, and the meeting resolved into Committee, when it was sought, successfully, to amalgamate Mr. Acworth and Mr. Hodgson's schemes.

On resuming the general meeting, the following proposal by the Hon'ble Mr. Hodgson, seconded by Mr. Acworth, was adopted:—

- (1) That the voting be by selected delegates.
- (2) That every Association be assessed at a minimum of 1 anna per acre on $\frac{1}{2}$ the area under cultivation represented by members of the Association, and that a maximum of 1 anna per acre on the total area under such cultivation may be subscribed by an Association and that a vote shall be given for every Rs.10 so subscribed.
- (3) Each Association shall be allowed to send 5 delegates.
- (4) That the rule relating to proxies shall stand.
- (5) That the Donation list be kept open for the Reserve Fund.

PARTITION OF FUNDS BETWEEN TEA AND COFFEE.

Mr. J. A. Harris withdrew his proposed motion on this subject as he believed the meeting considered his action to be somewhat premature.

THE RESERVE FUND.

This matter also was allowed to stand over till after the discussion on the registration of the Association.

REGISTRATION OF THE ASSOCIATION.

Mr. Acworth, in proposing that the U. P. A. should be registered under the Indian Companies Act, explained the disabilities under which they now laboured in investing their funds and the advantages not only in this respect but in giving them a legal status that would ensue from registration.

The Hon'ble Mr. Hodgson seconded the proposal, which was carried. The meeting at this stage adjourned till 10-30 A.M. to-morrow.

SECOND DAY.

BANGALORE, 10th August.—The delegates met again to-day at 10-30 A.M., and proceeded with the transaction of business on the agenda

paper. The Chairman announced that the discussion on Scientific Investigation would be taken up at 11 A.M. to-morrow, when Mr. Cameron, the Mysore Government Botanist, would be present.

CONSTITUTION OF THE ASSOCIATION.

The meeting then proceeded to revise the rules in view of the fact that Registration had been decided upon. The amended rules will be printed and circulated, and be confirmed by the meeting on Thursday.

THE CASKET AND ADDRESS.

Mr. Acworth explained that the cost of the Casket and Address to the Queen-Empress had been met out of the current funds of the Association, and he asked the meeting to confirm this payment.

Mr. Parsons seconded the motion, which was carried.

Mr. Acworth then stated that some donations had been received privately, but as they had not been utilised, he asked the meeting to authorise the Secretary to return them. This was done.

MALARIA.

The Hon'ble Mr. Hodgson stated that last year the Association had passed a Resolution asking Government for a scientific investigation of malaria on the same lines as that carried on by Surgeon-Major Ross and others. But on the 19th March this year Government had stated that owing to the strain on its Medical Department, the subject could not be taken up at present, but it would not be lost sight of. It was a matter of the utmost importance to planters, and he thought they ought to pass a Resolution asking Government again not to lose sight of the matter but to take steps to appoint a Medical Officer to carry out the enquiry as soon as possible. He would suggest further that in view of the great interest which Dr. Ross had taken in this matter, carrying out investigations at his own expense and in his own time, a hearty vote of thanks should be offered to him for the disinterested way in which he had carried on the investigation of the malarial parasite.

The following Resolutions were accordingly adopted:—"That the Secretary be instructed to convey to Surgeon-Major Ronald Ross the thanks of this Association for the public-spirited manner in which he, at his own expense, has carried on the investigation in regard to the malarial parasite—an investigation which is so much for the benefit of the public."

(2) "That the Secretary be instructed to again address the Government of Fort St. George on the question of the further prosecution of the investigation of the malarial parasite be not lost sight of."

REFERENCES TO THE HIGH COURT.

Mr. Acworth explained how the recent reference to the High Court under Act XIII. of 1859 came to be made and the action the Association took in having its views placed before that tribunal.

Mr. J. W. Hockin said that the statement of the Government of India, that if the High Court decided that if warrants could be served outside the jurisdiction of the issuing Magistrate the law would require alteration, appeared a matter for discussion. He thought they might ask the Government of India to obtain their opinion before any change was contemplated.

The matter was discussed in Committee and the proposal allowed to drop.

EMPLOYMENT OF COUNSEL.

Mr. Acworth explained with regard to the above reference to the High Court that it had been necessary to incur certain legal expenses, and he asked the meeting to authorise the Secretary to pay these expenses.

The proposal, after a brief discussion, was seconded and passed.

ROADS AND COMMUNICATIONS.

Mr. H. O. Newport asked that the matter of the Ahtoor Ghant Road should be allowed to stand over till next meeting, as in the present straitened condition of the Government's funds his Association did not care to press the matter. He asked, however, that the question of the construction of the Dindigul-Podanur Railway might be kept before Government and not allowed to be shelved.

Baron von Rosenberg said that at a meeting of his Association held during the year it had been decided that more prominence ought to be given to the subject of roads and communications by the United Planters' Association. The matter was briefly mentioned in the Secretary's Annual Report, and he had been asked to press the subject on the attention of this meeting. The fact that this was

a year of famine should not prevent their keeping their application in a state of continuity. Generally procrastination in matters of sort was a mistake, and if such procrastination was sanctioned by this Association, it would be gratefully accepted by the Boards and other bodies responsible for the construction and proper upkeep of roads. His Association was strongly of the opinion that the United Association could help them greatly in this matter, and its representations would carry weight when those of individual Associations would fail. In Travancore and other Native States probably no notice was taken of the applications of individual Associations, he felt sure that if the United Association would take the matter up and move in the more important projects, the Governments, Local Boards and Public Works authorities and others concerned would be more willing to listen to their applications. He therefore moved "That the Secretary of the U. P. A. S. I. be instructed to forward to the proper authorities such correspondence on the subject of roads and communications as might be sent up by District Associations, but that the Secretaries of District Associations be asked to limit such correspondence to important cases only."

Mr. G. L. Acworth said it was with the greatest delight he had heard Baron von Rosenberg's speech. At the beginning of his in his Annual Report, he brought a heavy indictment against the Travancore Durbar against their treatment of them in the matter of roads. "Just before I brought forward that statement, I saw a letter in the *Madras Mail* written by Baron von Rosenberg in which he stated that his Association had nothing whatever to complain of, and that the Travancore Government's dealings with them were perfectly satisfactory, whereas Baron von Rosenberg has now stated that very little notice is taken, especially in Travancore, of the complaints of individual Associations." That was just what his Association complained of, and it was gratifying at last to find Kanan Devan coming forward and supporting Central Travancore. They had a British Resident at their back and with Kanan Devan to assist them ought now to get their requirements attended to.

Mr. Parsons supported the Resolution.

Baron von Rosenberg said the letter he replied to in the *Madras Mail* was not Mr. Acworth's but another letter which ought not to have been published; it was scurrilous and abusive and would do them harm with the Travancore Government, not only in the application for roads but in everything else. Besides, in that letter he did not refer only to roads but to many other matters in which the Travancore Government had been of great assistance to them. It had been very liberal with regard to hospitals and dispensary, Magisterial work and Police, in all of which it had shown a wise progress with the extension of the District. In the matter of roads, however, he had always held that they should induce the United Planters' Association to come to their aid.

Mr. Windle having supported the proposition, it was put to the vote and carried.

"PLANTING OPINION."

Mr. Acworth explained that arrangements had been made with the conductors of *Planting Opinion* to reserve a certain section of it for publishing matters of interest to the several Associations and that Section would be entirely under the control of the U. P. A.

The subject was considered in Committee.

GOVERNMENT CINCHONA BARK.

Mr. Hodgson explained the several steps of the Madras Government policy in regard to the question of purchasing bark from private growers of cinchona and proposed the following Resolution:—"That this Association records its satisfaction and approval of the action of Government in purchasing bark from private growers instead of opening new land and purchasing new estates, and recommends the change of policy as likely to foster and encourage the cinchona industry in private hands, and is the best means of securing a continued supply of cheap febrifuge for the people."

The proposal was seconded by Baron von Rosenberg and carried.

DUTY ON CHEMICAL MANURES AND TEA SEED.

Mr. Hodgson explained the stage at which the question of exempting chemical manures and tea seed from import duty had arrived. Before leaving Ootacamund he had received a demi-official letter from the Revenue Secretary stating that the matter had been referred to the Government of India with a strong recommendation.

THE CLOSING OF THE MINTS.

Mr. G. L. Acworth introduced this subject in the following speech:—

GENTLEMEN,—The question of the closing of the Mints and the financial enhancement of the value of the rupee was debated by this Association in 1893, and it was suggested by Mr. Clarke that a Committee be appointed to draw up a Memorial to the House of Commons on the financial policy of the Government. The Resolution was, however, vetoed, and, I think, very properly so, partly because the policy of the Government had not received a fair trial, partly because the Resolution was on the wrong lines, as it would be of no use for any Association to act alone. Matters have, however, materially changed during the past four years, and the position of the rupee has now become critical. I therefore make no apology for introducing the subject once more, though I have no intention of detaining you any length of time, or of wearying you with statistics. It is quite sufficient to state the case broadly, and I am the more encouraged to do so, as I see that at last the financial world is waking up, and that the Chairman of the Bank of Bombay has practically denounced the policy of the Government. Although there have been during the past four years been varying fluctuations both in the value of silver and that of the rupee, the general tendency of the one has been to fall and of the other to rise, until at last we have reached a position, that the price of silver has dropped to 25 $\frac{5}{8}$ per oz., and the rupee has risen to an artificial value of 1s. 3 $\frac{1}{16}$ d., whilst experts think it is likely to touch as high as 1s. 4d., a difference between its official and real value of no less than 6d. in every rupee. Gentlemen, the Government is to be congratulated on its policy in so far as regards its present and fleeting interests. But I am quite certain, certain as I stand here, that, if the present state of affairs continues much longer, that it will have far more cause for bitter regret than it ever had for congratulation, or than it ever would have had if it had had the courage to abide by the laws of political economy, and had not listened to the outcry of interested Services, backed by its own difficulties. Do not think that I am blaming the Services, nothing is further from my thoughts. I look on the two most magnificent Services in the world; their case is a cruelly hard one, and their action has been perfectly natural. Had I had the honour to belong to one of them, I should most certainly have joined them in the pressure they placed on Government. But nothing can reverse the policy of the Government itself. To relieve its own immediate necessities, it adopted a fatuous policy, a policy as fatuous as that of the Lord Protector Somerset in the 16th Century, when he debased the coinage, or as fatuous as that of James II., when he melted down brass cannon and imagined that by calling a piece of metal, worth 1d., one shilling, he could persuade his own subjects, the merchants of Europe, to accept it in exchange for their goods at its face valuation. The attempt to appreciate silver is an attempt to depreciate gold, and I say that the policy of the Government of India has been as fatuous as that of these worthies, as under a clothing of drapery, which concealed the enormity of the crime, it adopted a policy which has ended in placing on the producer of this country a tax which now varies between 40 to 60 per cent. according to circumstances. Does any reasonable person suppose, that, under the conditions of production nowadays, any country is able to face such a terrible and crushing export duty, for it is nothing else? Can we, ourselves, who are now fighting with Brazil and China for our very existence in the markets of the world, long continue the battle under such a handicap? It is absurd to suppose it for a moment, and I say that the policy of the Government is a fatuous one, for it is killing the goose that lays the golden eggs. India is nothing if not an exporting country. She has practically no manufactures, and her exports are her life blood, her bones, her sinews and her marrow. Gentlemen, I speak in the interest of the whole of the producing classes of India. I speak also in the interests of the Government of India itself, for I believe that, if the present policy is long continued, the products as we have in which we compete with other silver using countries must die a natural death from the heavy taxation imposed on them, and the enormous corresponding bounty given to those countries. Gentlemen, at the time of the closing of the Mints I was much astonished that the mercantile communities of the great centres did not oppose the action of the Government and combine in a remonstrance, even as they did when the cotton duties were imposed. I presume what they desired was a stable exchange, that they were weary to death of the violent fluctuations therein which hampered their operations, and that they never imagined that the difference between the actual and artificial value of the rupee would assume such gigantic proportions. The experience of the past four years, however, has proved that the rupee fluctuates as violently as ever, and that in this respect the merchant has been in no way benefited.

Should the same fatal policy be continued, the experience of the next four years is likely to prove that the bounty given by India to the silver using countries will go far to throttle any trade in which we compete with those countries. The merchant then will suffer more heavily than ever, and I therefore believe we shall have them, the Bankers, and the Millowners' Association on our side, while I presume there can be no doubt that such bodies as the Indian Tea Association and the Ceylon Planters' Association would join us in a remonstrance to the Government of India, or better still, in a petition to the Secretary of State and the Houses of Parliament. I therefore propose:—"That the Secretary be instructed to communicate with all the large producing Associations both of India and Ceylon as also the Chambers of Commerce with a view to ascertain their feelings on this question, and with the object of endeavouring to form a combination for the purpose of representing to the Secretary of State and the Houses of Parliament the critical condition of the producing industries of this country, and to forcibly point out that, if the present policy is long continued, the export trade of India must seriously suffer, with the result that the final position of the Government of India will be worse than if they had never made the fatal blunder of tampering with the currency."

Mr. Hodgson said he was quite unprepared to speak on such an intricate subject, but he was quite prepared to support it by seconding Mr. Acworth's Resolution. He was sure all would feel sympathy with what Mr. Acworth had said. They were suffering enormous loss from the disparity between the real and fictitious values of the rupee, and this disparity seemed daily to be growing greater.

The Resolution was carried with acclamation, and the meeting adjourned till 11 A.M. to-morrow.

THIRD DAY.

BANGALORE, 11th August.—The delegates sat again to-day at 10-30 A.M.

THE RESERVE FUND.

Mr. J. A. Harris proposed: "That for the guidance of the Committee dealing with the Reserve Fund, this meeting wishes to place on record (1) that the Fund will be regarded as having been established for the purpose of providing for extraordinary expenditure; (2) that extraordinary expenditure shall be understood to mean such objects as the Committee consider cannot be fairly charged to current expenses; (3) that under no circumstances shall the Reserve Fund be drawn upon unless two-thirds of the Committee are in favour thereof."

The Hon'ble Mr. Hodgson seconded the Resolution, as he thought it advisable that some line should be laid down for the Committee to work on, while at the same time it was necessary not to tie their hands too much.

The Resolution was carried.

EXPORT DUTY ON BONES.

Mr. O. Scot-Skirving opened the discussion on this point and pointed out that the export of bones from the country was heavily handicapping the planter, and proposed: "That the Association again address Government on this matter to see if a remedy could be devised which would retain manures for agricultural purposes in this country from which it was now being exported."

Mr. Parsons supported the proposition.

Mr. Acworth opposed the proposition on the ground that it was contrary to free trade, and they were never likely to get it.

Mr. Hodgson agreed with Mr. Acworth and said it was a mistake to ask Government to legislate against its principles.

The Chairman put the Resolution to the meeting, and it was carried by 15 to 8 votes.

CURRENCY NOTES ON THE SHEVAROYS.

The question of Government's intention to re-impose a charge of commission for changing currency notes in the Yercaud Sub-Treasury was dealt with in Committee and a Resolution passed supporting the action of the Shevaroy Planters' Association.

SCIENTIFIC INVESTIGATION.

This subject took up the greater part of the day's Proceedings. It was divided into two parts, viz., Leaf Disease and Scale Pests. Mr. J. Cameron, Superintendent, Mysore Government Gardens, was present during the first part of the discussion and gave the meeting the benefit of his views on the subject.

LEAF DISEASE.

Mr. J. A. Harris said :—

GENTLEMEN,—I rise with great diffidence to open this discussion. I am perfectly aware that there are others present far better qualified to do so than I am. The fact that I am the representative of a district which has suffered most acutely from leaf disease during the past year is the only claim I have to introduce this subject. Since I first proposed a discussion on it I have been in communication with various correspondents, and have made myself better acquainted with what has been published relating to *Hemeleia Vastatrix*, and I have reluctantly come to the conclusion that further investigation by an expert would not be likely to add much to what is already known. Most of you are doubtless familiar with Mr. Marshall Ward's Report, but, for the benefit of those who may not have perused it recently, I place it on the table, and refer them specially to the summary of the conclusions he came to, on page 29. It will be seen that he has clearly established the life history of *Hemeleia Vastatrix* and I believe it to be the opinion of experts that nothing more remains to be done in this direction. You will observe that Mr. Marshall Ward was of opinion that the origin of leaf disease was to be traced to an invasion of spores from the jungle, that it did not permeate the tree, but confined itself to the leaves, and that no external applications could have permanent results unless the sources of re-infection were removed. All the experiments, many and costly, which he carried out, failed to remove the source of infection; lime and sulphur appeared to kill the parasite—but the benefit was only transitory, as the trees became re-infected with rust as bad as ever. I believe that other similar experiments had proved the same result, viz., only a temporary cure. It may be argued from this that there is still scope for the expert, but I am inclined to the belief that, since the disease is not constitutional, but external, attacking only the leaves, a cure of a permanent nature is not likely to be discovered; and that we should turn our attention, as intimated both by Mr. Marshall Ward and Dr. Trimen, to maintaining our trees in such strong vitality as will enable them to resist the attacks of this pest. The question as to how this may best be done is a wide one, but may briefly be answered thus, by careful cultivation and judicious manuring. I propose referring somewhat briefly to the former and at greater length to the latter. I use the word "cultivation" in a wide sense, and include pruning, digging and shading operations. With regard to pruning, I would draw your special attention to Mr. Marshall Ward's opinion that we should aim at making our plants grow leaves during the time that the disease is least likely to be propagated, and that we should avoid the growth of young and succulent wood when the spores are most blown about—with the object of having our trees at the time of visitations covered with matured leaves both able to resist the disease and of having them as far as possible free from young ones on which the spores germinate with great rapidity. This I am convinced is sound advice and should be carried out as far as labour supplies and seasons will admit. I think there is a decided tendency on the part of planters, in Mysore at any rate, to have too much wood, and a year like the past, when we have all suffered so severely from *Hemeleia Vastatrix*, accentuates the evil caused thereby. Excessive wood not only reduces the crop-bearing powers of a tree, but supplies so much superfluous surface for the parasite to feed on. The reflection that one branch of a coffee tree may bear at the rate of 1 cwt. an acre, and 10 branches $\frac{1}{2}$ ton per acre is calculated to raise a doubt in our minds as to the soundness of our pruning operations. Mr. Ward recommended the collection and destruction of fallen leaves. In Ceylon on some estates they actually burnt them, but this would be highly objectionable in Mysore, where we frequently get bad attacks of leaf disease in the hot weather, unless the leaves were carried away and burnt outside the estate, which would be laborious. It is rather curious to notice that in Ceylon the worst attacks of *Hemeleia Vastatrix* were usually in the S. W. Monsoon, during the months of June, July and August, whereas in Mysore, and I believe in other parts, the worst visitations come in September, October and November, and sometimes extend over January and February. Moisture, heat and air being necessary for the germination of the spore, I presume that the damp chill of our S. W. Monsoon checks it. With reference to digging operations, the late Mr. Pringle was of opinion that deep cultivation checked the disease, which I consider a very moot point, the tendency nowadays being to avoid stirring up the soil more than necessary. Draining in moist land is certainly beneficial. The old-fashioned

method of mamoty digging right up to the stem of the tree, though it may not directly have affected leaf disease, was doubtless injurious, in that it disturbed and destroyed the mass of fibrous roots, and prevented them from performing their fruit-bearing functions. The question of shade is a very important one in relation to *Hemeleia Vastatrix*, but is so much governed by local circumstances that I do not purpose entering into it, but will pass on to consider the all-important question of manure. The object of manure may be said to be to supplement the soil with such elements as are necessary for the maintenance of the tree in such vigour as to enable it to put forth leaves, bear fruit, and resist the ravages of disease. The two chief points to be decided are: (1) The best time for putting manure out, and (2) What manures should be applied. As regards the first point there is some diversity of opinion. The late Mr. Pringle advocated application during the first breeze of the rains at the end of July or August, in order to supply the tree with food as soon as possible to make up for the monsoon loss. Mr. Pringle specially recommended the application at this period of nitrogenous manures, as if applied after crop the nitrogen comes into action immediately showers fall, and checks the formation of blossom, and fosters the growth of wood. He attributed the failure of blossom to a great deal to this cause. I do not feel competent to decide this question, but I am inclined to believe Mr. Pringle was right, though I consider September, as far as Mysore is concerned, a better month than August for applying manure, as we frequently get heavy rain in the latter month. Applications must, however, be greatly influenced by the supply of labour. On many estates in Mysore it is impossible to put out all the manure that is available directly the S. W. Monsoon is over, consequently the usual practice appears to be to do as much as is feasible in September and the remainder after crop. Under these circumstances, care should be taken to apply what is suitable at each time. Another point to be borne in mind in applying manure is that already alluded to while considering pruning, viz., to aim at having matured leaves on the trees, and an absence of young wood at the time when an attack of *Hemeleia Vastatrix* may be expected. Now I come to the second division of this question, viz., What manures we should apply. To decide this we must determine three things: (1) What are the elements of the soil; (2) What are the component parts of the manures at disposal; (3) What is taken up by a coffee tree. I trust I shall offend no one when I say that I believe there are few planters who have satisfactorily mastered these points. I believe there exists an immense sum of ignorance among us regarding them, and I claim to be as great a sinner as any. We are all acquainted with the genus of planter who stakes his faith on manure! manure! and who piles it in regardless of the elements of his soil or the requirements of the plant. Another gentleman, a little more enlightened, seeks to apply a manure which contains a portion of all the elements that are considered necessary. Is such a system as this worthy of so enlightened an agriculturist and of such an industry as the planters of South India carry on. I say so emphatically! It is groping in the dark with the meanest light within our reach. The remedy is in our hands. I feel assured it lies in the application of scientific principles to our agricultural pursuits. There may be, no doubt there are, some of our body who have considerable scientific knowledge, but many, I am convinced, possess little or none, and have not the means of attaining any. I require therefore some one to tell us what to do, and this brings me to the one practical proposal I have to make, viz., that the plant industry of Southern India requires the services of an Agricultural Chemist. Let us just consider in connection with the three points I have mentioned above what he could teach us. And first as regards Nos. 1 and 2, the elements of soil and manure. Dr. Voelcker says "The infertility of a soil is often explained by an analysis. It may be suffering from the want of some material indispensable to the growth of plants, or it may contain something poisonous to plants. In either case chemistry is generally able to enlighten us, and to point out means of remedying the evil. Of a soil whose fertility is impaired we can all pronounce that it wants manuring, but with the assistance of analysis we may also learn what substance the soil is deficient in, and what kind of manure it wants, with his knowledge we may restore its fertility with the most economical manure." If a soil is rich in one element it is sheer waste of money to apply a manure containing a large proportion of that element, and if a soil is lacking in any one element no manure is of much value that does not contain that element. Considerations such as these must convince those who have worked blindly of what stupendous folly we have been

ty. We have spent thousands of rupees year by year in the application of manures, and have been all the while ignorant what our manure was crying out for and perhaps what the manures contained. There is the other point, what the tree demands. The late Mr. Pringle maintained that the leaves and branches took a great deal more out of the tree than the fruit, and that too much stress had been laid upon the composition of the latter, and not enough attention given to the former. Here again is further scope for the expert. One of you may perhaps be inclined to argue that analysis of soil is good, and analysis of manure is good, but why go to the expense of employing an expert? In reply, I would point out that there are many and cogent reasons for getting a thoroughly competent man in Home. In the first place, I doubt if the analysis of a sample of manure sent Home can be a true one, the mechanical conditions of it must undergo changes during transit; 2nd, a man on the spot would be in a position to observe the organic condition of the soil, which would enable him to give us a more accurate and valuable report. 3rd, in most soils there is an immense quantity of matter which at certain stages of decomposition fosters the growth of fungi, to which class, I believe, with leaf disease and leaf rot belong, and useful information regarding the treatment of this should be obtained at his hands. Again, experiments of different sorts might be conducted in connection with manures and as regards the requirements of the tree, as Mr. Pringle suggested, a standard for one artificial manure might be established. Moreover, those of us who are ignorant of agricultural science require practical assistance even when possessed of certain data, that is to say, given a soil analysis, a manure analysis, or an analysis of what the tree demands, we should be materially assisted by being guided as to what quantity of the analysed manure or analysed soil required to meet the analysed demands of the tree. In the coffee industry, at all events as regards the province of Mysore, I am in my opinion at the present time passing through a crisis. Few of us are working virgin land, and the distinctly increased debility of our trees, both young and old, manifested by their less successful resistance to disease, seems to indicate exhaustion of soil. It moves us to bestir ourselves, and to use our best energies and intelligence. But by ourselves we are impotent to cope with so intricate a question as this. Dr. Leather, the Government Agricultural Chemist, in his Report recently published, states that there is probably no part of agricultural practice so imperfectly understood as soil exhaustion, and that the degree varies greatly with the crop grown. Here is another and powerful argument in favour of my proposal, which, after all, involves nothing more than what others at Home have recourse to, viz., agricultural chemistry. You may perhaps be disposed to say, "Your conclusions may be perfectly correct, but we fail to see the bearing they have on Hemeleia Vastatrix." If so, I would refer you to my opening remarks, when I stated that in my belief our best hope of contending successfully against the disease lies in careful cultivation and judicious manuring. I pointed out a few matters regarding the former for your consideration. As regards the latter, I have ventured to criticise severely the mode of procedure common to many of us, and endeavoured to show that we are in urgent need of elucidation which we can only receive from the hands of a thoroughly competent Agricultural Chemist. I do not propose to lay before this meeting a definite scheme as to how we may accomplish this object. I shall for the present merely move a resolution involving the general principles of my proposal, trusting that the result of this discussion will be the evolution of a scheme which will be practicable and in accordance with the interests of all concerned. I will, however, broadly indicate the lines on which I consider effect may be given to my proposals. I am perfectly aware that a great difficulty faces us at the outset, and that is the raising of the necessary funds, but I feel assured that this great Association will not allow a matter of such momentous interest to be shelved, because it appears at first sight that Funds will not be forthcoming. In the first place I think we should approach the various Governments under whose rule we are and solicit their help, giving due emphasis to the enormous interests concerned, the benefits likely to be derived. Then I think the U. P. A. should be prepared to guarantee a certain amount of work, presented in Rupees, and to pay all initial expenses, and those connected with such experiments as it might be deemed desirable and feasible to conduct. This is not such an alarming proposal as it appears, for of course those individuals who required analysis would pay the fees themselves, or direct to the analyst or to the U. P. A., as might be arranged. I could further suggest that District Associations should be invited to subscribe towards defraying the expenses that would be incurred

were this proposal to be carried out. Generally speaking, I shall be strongly opposed to the U. P. A. now that it has placed itself on a firm financial basis, soliciting donations, but I think such an object as that now under discussion may be fairly made an exception. It is highly probable that one district would be interested in a much greater degree than another, and would be eager to contribute; opportunity should certainly be offered to it to do so and commit proposals to consideration. I beg therefore to propose:—

"That this Association is of opinion that the time has arrived when the service of an Agricultural Chemist are essential to the future welfare of the Planting Industry in Southern India."

Mr. E. G. Windle seconded Mr. Harris's Resolution. It was, he said, the most important subject that had come before the meeting. It was not possible for them to do their planting in a scientific manner until they got the assistance of an agricultural chemist; it was doubtful if they could proceed much further.

Mr. Parsons agreed in the abstract with what had been proposed, but before going to the extent it was proposed to do, he thought they ought to help themselves as much as possible by experimenting themselves. The first thing a specialist would do would be to ask them for the result of their experiments. Besides, he was not sure that an agricultural chemist was the proper man to deal with leaf disease. The man they wanted was a Botanist. Personally, he believed the best thing that could be done was to introduce better strains of coffee, and he was carrying on experiments on these lines himself on a small scale which he was glad to hear from Mr. Cameron were fairly successful.

Mr. Hay cordially supported the remarks made by Mr. Scott-Skirving in support of Mr. Harris's Resolution.

Mr. Hodgson quoted from a G.O., dated the 16th January, 1892, in which the late Mr. M. A. Lawson had said that nothing beneficial would accrue from any further investigation into the life history of Hemeleia Vastatrix and therefore Mr. Harris was right in abandoning his proposal to have an expert to investigate into the subject in favour of an Agricultural Chemist on superior cultivation.

Mr. Hockin said his was the Association that advocated the introduction of blight proof variety as a better cure for the ills of Mysore than the engagement of any specialist. He stated it as his experience in Wynad that leaf disease was always more prevalent in wet seasons than in dry, and three or four months' drought at the beginning of the year was always instrumental in keeping the blight down and giving good crops. He advocated, with Mr. Parsons, the introduction of better strains of coffee as a cure against the disease. He thought they could in this direction get more help from a man like Mr. Cameron than from an Agricultural Chemist.

The meeting then went into Committee to discuss the matter. Before Mr. Cameron left, it resumed into General Meeting to hear what he had to say on the subject. He thanked the meeting for giving him the opportunity of being present and hearing the discussion, which had been ably carried on. He thought what was wanted was a combination of the remedies suggested that day. They required good cultivation, the aid of an Agricultural Chemist and an improvement in the strains of coffee. It was doubtful if they could eradicate leaf disease altogether. It could only be done in two ways—one was by the discovery of an agency that would destroy the spores of Hemeleia Vastatrix, the other was by the drastic remedy of removing the coffee altogether for a long period and substituting some other crop. He advocated the formation on first class estates of experimental nurseries and gardens for the crossing of strains and producing blight proof varieties and gave an instance of some exceedingly good results he had seen from cross fertilization on Mr. Brooke Mockett's estate at Munzerabad.

The Chairman proposed a hearty vote of thanks to Mr. Cameron for being present and giving them the benefit of his advice on the subject.

The meeting then resolved into Committee again, when the following resolution was passed which was afterwards confirmed in General Meeting:—"That a Sub-Committee be formed to consider the various proposals put forward, and to advise as to the result in General Meeting and that for this purpose Messrs. Harris, Windle, Acworth, Parsons, Hockin and Leeming do form the Sub-Committee."

SCALE PESTS.

The Hon'ble Mr. Hodgson said that the delegates had seen the correspondence that had taken place between the Madras Government and the Commissioner of Agriculture, Hawaii, with regard to employing the services of an entomologist and the introduction of

lady-birds in the destruction of scale pests, subsequently a G. O. had been issued, dated the 27th July, which ran as follows:—"In view of the decided opinion expressed by the Commissioner of Agriculture, Hawaii, that the work of searching for and introducing the natural enemies of the insect pests should be entrusted only to a skilled entomologist, one who has made the life habits of the beneficial and injurious insect a special study, lest injury instead of benefit might arise, H. E. the Governor in Council considers it unsafe to apply for or introduce lady-birds from Australia except under professional advice and the supervision of an expert. If when the services of such an expert are procured he advises that a consignment should be obtained, H. E. in Council will be ready to take the necessary action in the matter and to contribute half the cost as proposed by the Hon'ble Mr. Hodgson. With reference to the Hon'ble Mr. Hodgson's request that the Government of India should be addressed in order that enquiries should be made of the tea planters in Bengal as to their willingness to share the cost of an entomologist with the planters of South India, H. E. in Council would observe that it would be preferable if such negotiations were carried on directly with the planters of Northern India. Having regard, however, to the public benefit which would probably result from the labours of such an expert, the Government is desirous of seeing one employed at an early date, and as the Department of entomology is under existing administration under Imperial direction, a specialist being entertained in the National Museum at Calcutta to carry out investigation on behalf of all provinces in India, the Government of India will be addressed with a view to ascertain whether the services of the Imperial Officer in question can be spared for carrying on Entomological investigation in this Presidency, and if not, whether it will now be possible to appoint another officer for that purpose. The Government observes that in the paper read by Mr. H. O. Newport at a meeting of the Lower Pulneys Association on the 29th February, 1896, he stated he was having two varieties of lady-birds sent out from Australia and that on their receipt he proposed to experiment with them and to communicate the results obtained to the Association. The Hon'ble Mr. Hodgson will be requested to be good enough to ascertain and state whether any further action was taken by Mr. Newport in the matter and if so with what result." In the first part of the G. O. Government had come to a decision that it would not be wise to attempt to introduce the lady-birds from Australia except under the advice of an entomologist. It was apparent that Government had reconsidered its decision, because in a conversation he had had with the Members of Government in June last it was almost decided that the two varieties that had done such good work in Hawaii should be introduced immediately, and he undertook to guarantee half the cost of importing these insects. He further mentioned that he would like the correspondence on the subject which had passed between the Government of Madras and the Government of India for information and that it should be sent to the Indian Tea Association in Calcutta. His reason for doing this was because in his letter Mr. Marsden had said that red spider among other pests had been eradicated, and he thought that if the planters in North India saw this they might like to join in paying some portion of the expenses necessary. It was decided by Government, however, that they should address the planters of Bengal direct, and he would therefore propose that the Secretary be instructed to forward copies of the correspondence to the Secretary of the Indian Tea Association for their information. The latter part of the Government Order was very satisfactory. It said that Government was desirous of seeing an entomologist appointed at an early date, and had already communicated with the Government of India as to the best means of obtaining one. That showed that the Madras Government had taken a great interest in this subject and he could speak himself of this being the case. He had had several opportunities of talking the matter over with the Members of Government and had always received careful attention and sympathy. Mr. Newport, who had a great deal of knowledge on the subject of lady-birds, would speak on the subject. All he (Mr. Hodgson) would say then that this scale pest was increasing rapidly, and in Districts in which it existed it was almost as serious a matter as leaf disease was in the Districts where that existed, and everything should be done to eradicate it.

Mr. H. O. Newport said:—

GENTLEMEN,—In supporting Mr. Hodgson's remarks I should like to say a few words on the subject. At last year's meeting I read a paper referring to a new species of lady-bird that I had discovered feeding upon the green scale in the Lower Pulneys, and which I subsequently found to be the *Chilocorus nigritus*, and at the same time

brought to notice the grand success that had attended the introduction of foreign coccinellidæ into the Sandwich Islands as a cure for coffee scale and blight, and I read extracts from some copies of the *Hawaiian Planters' Gazette*, and Professor Koebele's Report on which papers were sent to me by Mr. James Stanes, who was in Hawaii and saw for himself what the lady-birds had done and was doing there. I was then asked to continue my experiments. I regret to say that I have been unable so far to bring about any practical result. The lady-bird that I noted had not been previously observed to prey upon the green scale, *Lecanum Viride*. It was doing good work, however, and protected the species I found as I could. They increased slightly but not rapidly enough to make any appreciable difference in the scale, which increased terribly. The lady-birds did good work where they were to be found; the green bug disappeared for some three or four months during the monsoon and I found then that the lady-birds hibernated also. The few specimens I had I was unable to keep alive; I had none of the scale to feed them on. When the scale reappeared I found the lady-birds did not come out at once, but took some time longer to hibernate, and when they did appear, increased in number very slowly. My want of success in this matter I put down to my ignorance of the subject for, as I stated last year, I am not an expert entomologist,—or indeed an entomologist at all. It is possible that there may be a good deal in the suggestion of *Planting Opinion* where it said that the slowness of increase may be due to the presence of parasites. The fact of their being indigenous would point to the presence of some such parasite or natural enemy. On this I had not sufficient technical knowledge to determine. The matter had been then—or even if it were now—taken up by an expert, there is, I think, every chance of something being made of it, and our indigenous scale feeding insects made use of. However, it may be, my experiments in this line have not been productive of any lasting effect. Seeing that the green bug appeared so much more than the lady birds this year, I tried other methods of exterminating the bug. I obtained through the kindness of Messrs. Leighton & Co. of Madras, a spray solution from the Chiswick Soap Company, "Spimo," and sprayed this evil smelling liquid on to the tree in proportion of 100 parts to 1 as directed by the Soap Company. This had no effect whatever; in fact the bug seemed to multiply on it! Stronger solutions had better results, but even then I did not succeed in killing out all the scale on any one branch or leaf. I also tried a mixture of kerosene and soft soap in water in various proportions—also an infusion of quassia bark. Also mixtures containing in various proportions, turpentine, tobacco decoction, sulphur, lime, etc. Some of these seemed to have temporary slight effect, but none did any lasting good. With regard to the spray solution I tried, I found that it was very difficult to spray the coffee sufficiently through to reach all the small crevices of the stalks and leaves, and was much hampered by the closeness of the trees bearing coffee. This I fancy will be found the great drawback together with the difficulty of finding a mixture or solution that will really kill scale to any spraying operations and finally the impossibility of carrying out such operations in districts such as the Lower Pulneys, where water is scarce, and the great expense involved even in places where water is to be had even if in sufficient quantity for long transport. Besides this I have had some correspondence with Mr. E. E. Green, of Ceylon, on this subject, and he sent me some varieties of a blight that he had found attack the *L. Viride* in Ceylon. This I affixed to the leaves covered with any green bug and tried to propagate. I even sewed the two leaves together—thus affected by the blight to the underside of the leaf attacked by the virulent green bug. Mr. Hodgson also sent me some specimens of another blight that he had found upon the black bug and coffee in the Nilgiris, but neither of them was successful in transferring the bug on my estate. This, however, I think may be due to dry weather. A letter appeared in the *Ceylon Observer*, dated the 6th February, to which I replied in *Planting Opinion*. Since then I have had some correspondence above referred to with Mr. Green. I have not, however, yet been able to send him the living specimens of *C. Nigritus* as asked for owing partly to late appearance and partly to want of time. So much for my experiments. The conclusion I have come to, therefore, gentlemen, is that not only, as I said and thought last year, lady-birds would be the easiest and most effective way of getting rid of our scales, but that it is the only possible way of doing so. Our Hon'ble Member in Council took up the matter as you know after the last Annual General Meeting, bringing it up first at his District Association at a Meeting at which I had the plea

ing present, and subsequently taking it up direct to Government, and he was fortunately able to instil interest then in the matter and get them to act upon his suggestion. I need not read you the letter at the Government of Fort St. George wrote to the Commissioner of Agriculture of the Sandwich Islands, nor need I read to you the exhaustive and satisfactory reply sent by Mr. Marsden to our Government, as these papers have been published both in the daily papers and in *Planting Opinion*. I regret that Mr. Marsden, in sending the papers that we enclosed with his letter to the Madras Government, did not also send copies of the *Hawaiian Planters' Monthly* for April, August, and October, 1895, as these contain a lot more information, and in my opinion give a lot of useful and necessary information about the colonisation of these useful predaceous insects. I have, however, published these extracts in my first pamphlet on the subject, dated February, 1896, in pages 11 to 20 (and I believe Mr. Hodgson has already placed them before Government). To show you that lady-birds do most effectually and thoroughly exterminate the scale pests on coffee as well as borer, red spider and other injurious insects on coffee, tea, sugarcane, oranges and all iron trees, I should like to read you some extracts from the papers and reports enclosed by Mr. Marsden in his letter to the Government of Madras. [Mr. Newport read several extracts from the *Hawaiian Planters' Monthly* and other papers.] This all, I think, goes to prove conclusively that the lady-birds if introduced will do all that we want and more. And now, gentlemen, just a word or two to show you the gravity of our situation here in South India. There is a tendency, I am afraid, among planters to think little of this, and few really know and appreciate the gravity of the case. Possibly some may think that I am carried away with my subject and painting a blacker picture than is necessary or is warranted, or possibly some may think I am inventing an ingenious method of relieving the P. A. of its newly-obtained Reserve Fund. But joking apart, it is not so, I can assure you, and if, in trying to give you some idea of what the introduction of the green scale, *L. Viride*, has really meant to us I refer frequently to my own district and my own estate, it is only because it has been the first District attacked and the effect on my own trees is what I have been able most thoroughly to follow. I trust that you all, gentlemen, will see it in its right light, and that as a serious and solemn warning that is *not* to be lightly disregarded. A fearful enemy has crept among us and he must be grappled with firmly and strongly and conquered, and that *at once*, before greater harm is done, or we shall be driven back step by step, and before long have to give up our estates and seek some other means of livelihood. How this green bug came into India is still an open question, but there is little doubt that it has been brought over from Ceylon by coolies. The Madura District is, as you know, the source of the principal labourers on the Pulney Hills, and the probability is that the eggs of this scale have been brought over by some of them in cloths or cumbles. I have already described the bug itself in the pamphlets I have circulated. Its life history has been gone into very fully by Mr. E. E. Green, of Ceylon. The effect on the coffee is in a few words this: it attacks early in the year and spreads rapidly; being green and keeping to the underside of the leaves, it is often not noticeable; for months it remains like this and a field of coffee is soon run over by it. The stock will not look any the worse. The leaves will not fall off at first and remain green and apparently flourishing—but the poison is there. As the rains commence, the bug begins to leave and its awful effect begins to be apparent. The leaves get covered with the transparent sticky excrement of the bug, which soon turns black. Then the leaves begin to fall, the wood shrinks and the whole field in a few weeks become sticks. Some trees die out at once, but not all; they recover later on but not till after a hard struggle, which absorbs all their strength and leaves them no sap to put into new crops. The bug-attacked tree *does not bear for two years* subsequently to its attack by the *L. Viride*. Last year we had a bad attack of bug in the Lower Pulneys. It came on as the young berries were beginning to form, and the effect was to destroy the young leaves, which then dropped, leaving us only 35 to 50% of the crops to come into the store. Of the young crop we actually had on the trees estimated crops of 30 tons were reduced to 10 or 12; of 20 tons to 7 or 8. This year on one estate of 250 acres it is doubtful if even 5 tons will be picked; on another estate of 100 acres 6 tons, and another property of 260 odd acres only 1½ tons. These figures speak for themselves. Gentlemen, estates are working at a loss now from the effect of the awful scale. Coffee stealing nowadays does not leave any wide margin between income and expenditure.

and we have found ourselves perilously near to the line below which coffee planting will cease to pay at all. Even if this bug spares our trees, it does not spare the crops, and if something is not done, and that quickly, we on the Lower Pulneys will have to abandon our estates and leave the District. Green bug has increased fearfully and rapidly during the past year. Many times the acreage that was affected when I last addressed you on the subject is now riddled with green bug. It is spreading North, East and West. It has appeared on the Sirumallais, to the East of the Lower Pulneys, has gone to Aycoody to the West and has now reached the Nelliampathies also. I think you will allow, gentleman, that this is truly a serious and alarming state of affairs. The remedy, however, is here, and the matter is so grave a one and affects such deep interest that we shall not, I feel sure, appeal to our Government for assistance in the matter in vain. We are not merely sitting still and expecting others to come forward and help us. We are not hesitating about putting our hands into our own pockets. We are prepared, even in our small District and in spite of losses, to raise some Rs.4,000 or Rs.5,000 towards the employment of expert assistance if necessary. One gentleman owning 100 acres or less of coffee has declared that he is prepared to put down Rs.1,500 or even as much as Rs.2,000 alone. This too will show, I think, that the matter is really serious. A great deal of thanks is due to Mr. Hodgson for the able manner in which he has taken up the subject and the interest he has taken in it, and the interest he has been able to get the Government to take in the subject. I trust that he will carry on the good work he is doing and will keep the matter before Government, and at the same time impress upon them the grave necessity for speedy action in the matter. I am given to understand that Government have decided not to import any experimental consignments of lady-birds without the advice of an entomological expert, and that the employment of an expert will need reference to the Supreme Government. This I am afraid means loss of time. I hear also that the Madras Government is in communication with the authorities at Calcutta with the object of engaging if possible the services of some entomologist in India. We can but regret that Professor Koebele cannot leave Hawaii and come to us, but at the same time must acknowledge that the Hawaiian Government would be weak to allow the services of so efficient and successful entomologist to be taken elsewhere. I should like however to bring to your notice the name of Mr. E. E. Green, of Eton, Pundaloya, Ceylon, a gentleman who has studied the subject of Coccidæ in Ceylon, who is thoroughly conversant with this particular subject and an eminent and successful entomologist. I think I am right in saying also that he is the Honorary Entomologist to the Government of Ceylon. I should like to suggest that the Government of Madras address Mr. Green on the subject and ask him if he would be willing to come over and undertake the working out of this subject on the lines of the experiments so successfully done in Hawaii. That to save time—and possibly expense too—Government employ the services temporarily of some local entomologist in Australia to collect and forward consignments of lady-birds and Mr. Green be asked to receive these in Ceylon, bring them over to India and set them to work here in our affected parts. The question of having reliable data for an expert to go upon, if engaged, has been raised. In this matter we have not only precedent in the work done in Honolulu, but have reliable data and information with regard to our scales in Mr. E. E. Green's Book:—"The Coccidæ of Ceylon" now, I believe, in the publisher's hands.

Mr. Acworth said he had great sympathy with the planters of the Lower Pulneys. He believed green bug was even a more serious evil than leaf disease. Leaf disease they had always with them, but now he firmly believed that green bug would travel northwards just as leaf disease had done and would thus add to the trouble. The Lower Pulneys were prepared to come forward with Rs.3,000 or 4,000 to send a special person to Hawaii to collect the lady-birds and bring them back and distribute them, and he thought this was an occasion on which the Reserve Fund could properly be called upon to supplement this contribution by the Lower Pulneys. He therefore proposed "That a small Sub-Committee be appointed to decide upon an amount to be taken from the Reserve Fund to be added to any sum raised by the Lower Pulneys and other Associations for the purpose of immediately introducing the lady-birds."

The Resolution was seconded by Mr. Hodgson and carried.

Mr. Abbott explained that the green bug had appeared in the Nelliampathies, but after the monsoon it had disappeared, he hoped never to return again. It had not done much damage.

Mr. Hodgson moved and Mr. Newport seconded the following proposition, which was carried:—"That the Secretary be instructed to forward copies of the correspondence on this subject to the Secretary of the Indian Tea Association, Calcutta, with a view to obtaining the support of that Association in the matter of the employment of an entomologist and the subsequent introduction of the national enemies of the various insect pests inimical to tea and coffee."

Mr. G. L. Acworth said it was all very well for them to pass Resolutions on the subject, but they could do nothing without the help of Government in the matter of lady-birds and in fact every matter brought before it. For the last five or six years the Government had shown great sympathy with planters and that had specially been the case under the administration of H. E. Sir Arthur Havelock, and he had therefore to propose a formal vote of thanks for his kind sympathy and the attitude he had taken. He therefore proposed and Mr. E. G. Windle seconded the following Resolution which was carried:—"That this Association would wish to record its thanks to H. E. the Governor and the Government of Fort St. George for the active interest it has taken in the subject of the introduction of lady-birds and other natural enemies of the insect pests to which tea and coffee are subject, and for the promise of practical help as conveyed in the G. O., No. 634, of the 27th July, 1897."

The meeting then adjourned for lunch.

After lunch Mr. E. G. Windle in a long and elaborate speech dealt with the subject of the adulteration of manures and moved the following proposition, which was seconded by Mr. F. S. Hay:—"That, if the necessary support can be obtained from planters and the firms engaged in the manure trade, the U. P. A. S. I. engage or subsidise a suitable Agricultural Chemist for the purpose of analysing manures, soils, etc., by a standard method and advising on all points of planting chemistry."

After some discussion the following Resolution was passed in Committee and confirmed in General Meeting:—"That this matter be enquired into by the Sub-Committee appointed to consider the question of leaf disease, and if it is resolved that an expert shall be employed, that the Sub-Committee do also suggest what sum should be allotted from the Reserve Fund in aid of that purpose."

The meeting then adjourned till 10-30 A.M. to-morrow.

LAST DAY.

BANGALORE, 12th August.—The delegates sat for the last time this morning at 10-30 A.M. and disposed of the business before them.

THE RULES.

The revised Rules were passed and adopted with an addition to Rule XII.

LADY-BIRDS.

Mr. Acworth brought forward the Resolutions of the Sub-Committee appointed to consider this subject. They were as follows:—"That this Association do allot Rs.2,000 from the Reserve Fund to be added to any other sums raised for the purpose of introducing *Coccinellidæ* in Southern India with the object of combating scale pests. (2) That the Planting Member of Council be instructed to approach H. E. the Governor to ascertain to what extent the Government of Fort St. George will afford financial assistance. (3) That in the event of a sufficient sum being raised a qualified person, preferably Mr. Newport, be despatched to Australia and elsewhere to collect and bring back the *Coccinellidæ*."

The Hon'ble Mr. Hodgson drew attention to the fact that the Government of Madras in its Order of the 27th July had stated that it was prepared to pay half the cost.

The second paragraph of the Resolution was accordingly withdrawn.

Mr. Windle seconded the Resolution, which was carried.

THE PLANTERS' ENQUIRY COMMITTEE REPORT.

The Meeting resolved into Committee when the Secretary read the draft letter to Government embodying the result of the deliberations of the Meeting on the Report. The letter was adopted.

LEAF DISEASE.

Mr. J. A. Harris brought forward the result of the deliberations of the Sub-Committee on this subject. They were as follows:—

(a) That the Secretary be instructed to ascertain what each District Association would be prepared to subscribe annually towards defraying the salary of an Agricultural Chemist to be employed for the purpose of directing cultivation with the object of combating leaf

disease and other pests. (b) To ascertain what the Government of Fort St. George and those Native States in Southern India interested in the matter are prepared to give towards the purpose. (c) That in the event of the replies proving satisfactory a donation of Rs.2,000 per annum if necessary be given from the Reserve Fund for this purpose. (d) That the Secretary do ascertain the expense of employing a thoroughly qualified expert, and communicate the result to the District Associations concerned.

In bringing this proposal before the Meeting, he said he would make a few remarks. In the first place he would point out that what the Sub-Committee proposed was in accordance with the suggestion given yesterday by Mr. Cameron. He (Mr. Cameron) had suggested that there should be more careful cultivation and that they should endeavour to introduce new strains of seed. The first two proposals would give effect to Mr. Cameron's recommendations and there would be little opposition to those proposals. It would then be advisable to ascertain what their ways and means were likely to be, and he had a strong reason to believe that District Associations would strongly support the proposal referring to that; and he thought from the sympathy which the planters had received from the Government of Fort St. George during the past few years, it was not unreasonable to suppose that to the same extent it would sympathise with him in this matter, and would render them as much assistance as it reasonably do, and he felt sure that Native States would follow the example. The third proposal was more open to criticism as it involved a large call on the Reserve Fund. But, he maintained the importance of the object for which he asked the allotment was adequate to the extent of the call which it was proposed to make. He mentioned, he said, that the opinion of the Sub-Committee was that the call should be spread over three or four years as they were of opinion that an Agricultural Chemist could not perform the duties they wanted him for in a shorter period, and also that they could get the services of a qualified man for a shorter period. In this connection he read a letter from the Director of the Botanical Garden, Peradeniya, Ceylon, on the impossibility of absolutely stamping out leaf disease. He mentioned this because Mr. Parsons seemed to think yesterday that he took too gloomy a view of the leaf disease in Mysore. In Ceylon they had an industry entirely exterminated by leaf disease, and the result of experiments was that no specific remedy for it could be found. The result of the discussion yesterday showed that Mr. Cameron was of the same opinion, and that strengthened the proposal put forward by the Sub-Committee that the best course to take would be not to try and find a specific remedy, but to improve the methods of cultivation. It might be contended—he thought—that during the course of the debate yesterday—that it was impossible to find funds for the purpose they had in hand. Personally he did not think that was likely to be the case. He was perfectly satisfied that in order to get a thoroughly qualified man they would have to pay a large salary, but, as he had said before, he thought the District Associations would pay liberally. They were most deeply interested and felt that unless something was done the future of the Ceylon industry would be imperilled and he felt sure that if the matter was placed before them in the proper light they would come forward to give assistance. He would ask the meeting to remember that they would have to pay the Chemist a large salary a certain proportion of this would be recouped out of the fees that would be charged for his services. He therefore moved that the Association adopt the proposals of the Sub-Committee.

Mr. H. G. Parsons read the following recommendations:—(a) That the Mysore Government be addressed with the object of ascertaining whether the services of Mr. Cameron may be utilised for supervising experimental plots for the improvement of the strain of coffee plant in various planting Districts. (b) That if necessary a sum of Rs.1,000 be drawn from the Reserve for this purpose.

Mr. Harris said that it was considered by the Sub-Committee that both these proposals should be considered together.

Mr. H. G. Parsons said his feelings were more in favour of the latter part of the Resolutions than the former. He was quite of opinion of Mr. Harris that the services of an Agricultural Chemist of the best sort might be desirable, his only doubt was whether the latter Resolution, he thought they should start immediately with experiments, and he would particularly point out the fact that the experiments should be undertaken by themselves under the guidance and direction of Mr. Cameron. It would, of course, take some time to prove these experiments; but it would be interesting and likely to lead to useful results. With regard to Mr. H.

marks on what he (Mr. Parsons) said yesterday as to taking tooomy a view of the situation, he would say that he had not seen sore and could only hope that Mr. Harris's impressions did not together represent the true state of the case. With regard to disease having destroyed the Ceylon industry, he did not think present they could compare the two in any way whatever. What isted to destroy the Ceylon Coffee industry was the change in ate. That is to say when Ceylon had the same dry weather y had in India, their crops were enormous, but when the weather nged and they had rain every month, leaf disease got a hold and n that time coffee steadily went down. That was not the case the Coffee Districts of Mysore, and as long as they had dry sons leaf disease was not the scourge they were inclined to think as.

Mr. Hay supported Mr. Harris's resolutions.

Mr. Sprott read the following notes on spraying as a preventative leaf disease:—

have been told that it might interest and perhaps be of some use he members of the U. P. A. S. I. if I put down a few notes about spraying with sulphate of copper and lime, which we have been rying on on our group of estates for the last six years. You st please to bear in mind that I know nothing about science and e not the pen of a ready writer, and all I can give are a few etical facts from my own observations. I am so convinced of utility of spraying, that we have gone on steadily increasing the mber of our machines and the area done every year, and now ve a dozen of them at work on our different estates. In the umn of 1891, Mr. H. A. Mangles sent me out two of the Eclair apack Sprayers, and suggested we should try the effect of the uille Bordelaise, which has been so successful in checking the yloxera in vines, and the potato blight. I started to try it in auary, 1892, using 4 lbs. sulphate of copper and 4 lbs. lime to 25 lons of water. I have since found that the addition of a double adful of common refuse jaggery makes it stick better and last ger. It was rather late in the season, but I started spraying and some patches which had leaf disease, and it certainly seemed stop it spreading. I started again as soon as we get a little fine her after the monsoon, beginning on an exposed ridge where f disease always shows up first, and had a long strip sprayed all ng the ridge. It was mostly done a second time about October, d leaf disease did it very little harm that year. Since then we ve done this ridge every year, as soon as possible after the mon- on, and sometimes twice, with the result that the coffee has im- oved and thickened, and though the coffee is over 30 years old, it ps better and looks stronger and more vigorous than it was t years ago. We have kept on steadily doing those parts where f disease usually appears first, and where it has been taken in e, that is, before the leaf disease has appeared, the attacks though t entirely prevented, have been very mild, and not done much age on these parts. Every planter knows that there are certain rts of the estate, where disease appears year after year, chiefly posed ridges or edges of roads before other parts, and which are rseries to breed it. By spraying these, I am sure a great deal of ease can be prevented, and the poor pieces benefited. I believe e late Mr. Pringle gives the average life of a coffee leaf as onths, but I have often seen leaves looking strong and healthy in ay that were sprayed in August and September. Nurseries, too, en suffer from leaf disease, and it will be found very beneficial to ray them two or three times with a weak solution and to oughly spray them shortly before they are put out or else to dip e leaves in a bucket containing the solution, after they have en dug up. This saves the plants to a great extent from e severe attack of leaf disease, which they so often get after the d of the monsoon, but care must be taken not to make the solu- on too strong, or otherwise it will burn the tender shoots. About o-thirds of the quantity previously given is enough. I saw this ry strikingly illustrated on one of our estates about 3 years ago. ar plants had been dipped in the solution as they were taken out the nursery, and had been sprayed some time before. Our neigh- urs' plants all round had a severe attack of leaf disease, but ours e not touched and were very successful. I was also once enabled detect a plant stealer. He had stolen some of my sprayed plants, hich were found in his clearing, and I was able to identify them d get him convicted. Four coolies with three Eclair machines, if ater is within a reasonable distance, can easily thoroughly spray lf an acre of coffee, more if the trees are at all thin. The sulphate copper costs in England 19s. per cwt. f.o.b. and it costs roughly

about Rs.7 per acre to thoroughly spray the coffee, but of course it varies on account of carriage of water, character of land and coffee. The Eclair machines cost, I think, about 30s. in England, and last a long time, only the india-rubber parts have to be renewed, and they can be got from the makers very cheaply. It is, of course, impossi- ble without a large number of machines to spray all parts in time before leaf disease appears, or to do it so thoroughly that none will appear but the spraying seem to lessen the effects of the disease, and wherever the solution touches the disease it kills it. The disease often appears on leaves which have been sprayed, but it was probably of a much lighter colour than usual, and has fewer spores and the leaf does not fall off. I was told by a Nilgiri planter that he had been using the solution very successfully for rot, but have not tried it much myself, as the difficulty is to apply it during the monsoon. I think a very appreciable difference can be made in the effects of the disease by spraying, but it must be remembered that the time to do it is before the disease appears, to get the full benefit of it, and that it should be done a second time if possible. Half an hour's sun will dry the solution on the leaves and it will stop there for months on the underside of the leaf. It is quite easy to spray so that the underside of the leaf is touched. This is my first attempt at anything of this kind, so must ask your forbearance at my attempts to put things before you. (Cheers.)

Mr. Acworth said the interesting statement read by Mr. Sprott put a different aspect on the Resolutions drawn up in Sub-Commit- tee, and he could not help thinking that Mr. Harris and Mr. Hay would be the first to admit the fact. If they could get such good results from spraying it would be a pity to go to the expense of getting out an Agricultural Chemist. They might try for six months or a year, in Mysore, what effect spraying would have. If it was beneficial, they would only have wasted money in sending for an expert.

Mr. E. G. Windle said he had listened with great interest to what Mr. Sprott had said. It was not altogether new, and it was very possible that what might suit one District would not suit another. That might be the reason why the same experiments tried by some in the Nilgiris had not succeeded. He thought it fair to mention this now, and he would not have mentioned it, but for Mr. Acworth's remarks.

The meeting then went into Committee where after some discus- sion, Mr. Harris's and Mr. Parsons' combined Resolution was carried and adopted in general meeting afterwards.

COFFEE STEALING.

Mr. J. G. Hamilton read the following Report on the small Sub- Committee appointed to consider the subject of Coffee Stealing:— "That Mr. Hamilton's proposals formulated at the Annual General Meeting of the South Mysore Planters' Association be circulated to subscribing Associations with a view to ascertain whether they meet with general approval. Should this prove to be the case it is recom- mended that the Executive of the U. P. A. S. I. endeavour to secure their recognition by the Governments of Madras, Mysore, Travancore and Cochin."

VOTES OF THANKS.

Mr. Acworth said:—Before this meeting closes I should like to have an opportunity of moving a vote of thanks to the various Firms who have so liberally come forward to support our Reserve Fund. It is true that they are more or less interested in planting, some of them own property, but others are mere agents and hold no property, still one and all came forward liberally to help us, and it is to be hoped that they will continue their help. The Firms I refer to are Messrs. Arbuthnot and Co., Messrs. Parry and Co., Messrs. Binny and Co., Messrs. Morgan and Sons, Messrs. Aspinwall and Co., and Messrs. Peirce, Leslie and Co. These have all come forward with handsome donations. (Cheers.)

The vote of thanks was accorded with acclamation.

TO THE PLANTING MEMBER.

Mr. Acworth said I have another vote of thanks to propose and I must say I have never proposed a vote of thanks with greater pleasure than I rise to propose the vote of thanks to the Hon'ble Mr. Hodgson for the excellent work he has done for the Association in the past year. (Cheers.) It has been my good fortune to be closely connected with him in the business of our Association, and I can only say that with a gentleman like the Hon'ble Mr. Hodgson it is a pleasure to work. His promptitude in business is beyond praise, his temper is unfailing, his tact is admirable, and his advice, on the many occasions I had to ask for it, was excellent. I would ask you to consider how

important a thing in a person holding the position of a Member of Council is the quality of tact. It has proved especially beneficial in this particular instance. Mr. Hodgson has practically scored off his own bat what this Association has been endeavouring to bring about for several years past, and that is the cessation of the cultivation, or rather the cessation of the expansion of the Government Cinchona Estates, and to induce the Government of Madras to buy its supply of bark from the private growers. Mr. Hodgson has done this entirely himself, and I must say that all Cinchona growers ought to be exceedingly grateful to him. Mr. Hodgson has moreover interested himself in every single concern of the Association, and I therefore beg to propose a hearty vote of thanks to him, and at the same time would express the hope that he will see his way to continue in the office he now holds. (Cheers.)

The Hon'ble Mr. H. P. Hodgson, in acknowledging the compliments, said :—

GENTLEMEN,—I really hardly know how to express my feelings and to thank you for the kindly reception just given to the vote of thanks proposed by Mr. Acworth. I can only say I feel doubly grateful for it and equally proud. I am afraid that Mr. Acworth in the kindness of his heart has very much overrated the services I have rendered (No! No!) and I am quite sure he has very much overestimated my personal ability (No!) However, whatever my ability may be, I may say it is my earnest wish and desire to use it for the interest of the planting community, to push and promote it as far as possible so long as the planters themselves take an active interest in their own affairs. So long as they sympathise with the work carried on by the Executive of this Association, so long will I be only too pleased to do all that in me lies to assist and help. You can give me no better proof of your appreciation and no better reward for the services I have rendered. I can assure you that the reception you have accorded me to-day is a larger reward than anything I could have expected for what I have done for you. (Cheers.)

TO THE SECRETARY.

Mr. H. G. Parsons. Before you close this meeting, I have also one Resolution to propose. I think you will all agree with me that our cordial appreciation of the services of our Secretary during the year be accorded by this Association. All will admit that the work has been uncommonly heavy, but he has taken the greatest interest in it. When you read the letter to Government which lies before you I am sure you will all admit that great ability has been employed in its composition, and the Sub-Committee heartily acknowledge the assistance he rendered and offer him their grateful appreciation of his services.

Mr. H. Ormerod acknowledged the compliment briefly and suitably.

TO THE CHAIRMAN.

The Hon'ble Mr. H. P. Hodgson. There is one more vote of thanks we ought to pass, it is the vote of thanks to the Chairman (Hear, hear). He has conducted the somewhat difficult business of this meeting with tact and ability—to say nothing of the able manner in which he conducted the dinner the other evening (Laughter and cheers). I think when we know more about him at the end of the year we will be able to pass a vote of thanks more in detail and more in keeping with his deserts. At present we are all agreed in passing a hearty vote of thanks for what he has done at this meeting.

THE CLOSING ADDRESS.

The Chairman in reply, and in closing the meeting, said :—

GENTLEMEN,—I thank you very much for your kind expression of appreciation of my services while in this chair. I think I told you at the beginning when I accepted office that I was not likely to underrate the responsibilities attached to it. It will be a year full of importance for us. The agitation of the last 30 years about our labour laws has at last culminated. The Government of India when it deals with the Report of its Committee of Enquiry is bound to take legislative action of some sort. We have clearly indicated the lines on which we would wish that legislation to be, and it remains to be seen if the Government of India will approve of them. At any rate, I am glad to think that we ourselves know our own minds and have been unanimous in approving of the Report taken as a whole and of its chief recommendations. We are like one who has long been engaged in a law suit and has at last gained a verdict in his favour, but awaits the judgment of the Court. I sincerely trust that it may be so satisfactory as to find us unanimous in welcoming it. We have not gone one step beyond the Committee in making our suggestions to the Government of Madras, and in

consequence I trust that in that fair and liberal spirit with which late they have treated all our representations, they may again give the weight of their influence on one side. (Hear, hear.) Personal regret that the constitution of our Association has been changed, however slightly. I always liked Mr. Acworth's original scheme, but wanted no other. Although he has been unable suddenly to set up a big Reserve Fund, we can still build it up, like the ant heap, particle by particle. This coming year we are promised a subcommittee larger than our expenditure is likely to be, and the Reserve Fund still open for donations, and you must remember that we have decided to draw on it largely for the necessary object of trying to save our industry from pests, and I trust that this fact will bring it to the minds of those concerned the absolute necessity of increasing this Reserve Fund. One advantage of our new rules is that the district, however poor, though it may be restricted in its financial power, can always be represented by five members and so make its voice heard, and I trust that the personal interest of the Association which Mr. Parsons wishes to foster, may be fostered by more gentlemen attending the meeting next year as representatives of their Associations. Mr. Acworth has made an eloquent plea against the financial policy of the Government of India, with which we are all in accord, but in which we can do little good unless other producing Associations, the Merchants and Chamber of Commerce Chambers of Commerce throughout the Empire join hands with the representative of the great farming class. One of the most interesting discussions that we have had was on our plant diseases, a discussion made doubly interesting by the attendance of Mr. Cameron. I welcome these interesting discussions as a new departure commenced last year by Mr. Newport, and improved on considerably this year. The Sub-Committee appointed to consider have reported very favourably on the matter, and if their recommendations are carried out, I trust that we may succeed in arresting the insidious advances of disease, for, as it was repeatedly said during the debate, our very life depends on it. It would indeed be hard to win our battle for legislative power in our control of labour, when capital was gone and labour ceased to be of paramount importance. Myself, I do not in the least think this likely and still more am I confirmed in this opinion after hearing Mr. Sprott's interesting note. The bug may be destroyed altogether, and though I do not think you will ever eradicate the disease, I agree with Mr. Parsons and Mr. Sprott, that its damage may be minimised and in the comparatively dry climate of Madras it can never be the scourge that it has been in Ceylon. I will not dwell on the various matters discussed in detail, but as Mr. Hodgson has said our thanks are due to H. E. Sir Arthur Havelock and the Madras Government for the consideration we receive at their hands as practically shown in the matter of purchases of Cinchona. I should like to endorse Mr. Acworth's remarks in this matter as thanks are due to the energy with which our Planting Meeting Mr. Hodgson, has conducted the matter, and I am glad to think that at the expiry of his term of office next February he is willing to serve again. Our affairs political having been *sub judice* during the past year have naturally not received much notice from the press, but when the time comes, I have no doubt we shall be able to rely on the *Madras Mail* and other friends in the Press, for its able assistance in the future as in the past. I should like to thank Mr. Bremner, our able reporter, as he has done an easy task sometimes when we are in Committee as I can see from his occasional appealing glances to the Chair. Gentlemen, my friend Mr. Parsons lent me a book at the beginning of the Meeting on the duties of a Chairman, in which I read that a Chairman should not try to influence the votes, and in consequence I have kept clear from debate as much as possible, but this is a matter of little importance when you consider that we have passed some 30 Resolutions and have only once had a close division, and that was on the question as to whether we should ask Government to put an export duty on bones, a subject I am glad to say on which we would have been unanimous, if it had been a mere matter of our own interest. We were only divided as to whether we should put our own interests in opposition to the broad laws of political economy and public utility. I take this opportunity of thanking Mr. Parsons for the assistance he has given me in my duties as Chairman throughout the Meeting. In conclusion, gentlemen, as I told you at the beginning I am not a ready orator like your late Chairman, but I intend to work hard in the coming year on your behalf, and trust that our interests will suffer through any want of energy or judgment on my part. I declare this meeting closed.

The meeting then dissolved.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

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N.B.—Remittances should be sent to the Managing Proprietor of this paper, Coonoor, Nilgiris, South India.

MANAGER'S NOTICE.

Back Numbers: A few odd Back Numbers offered. A few odd back numbers of 1896 for sale at four annas each.

Covers for Vol. I. Cloth covers for binding Volume I of *Planting Opinion* have been prepared, with a set of Index sheets for dividing the Nos. 1 to 34 for easy reference. The cover and set of Index sheets may be obtained from Messrs. Addison & Co., Madras, printers of this journal, for Rs.3, but it is recommended that subscribers should send their copies to that firm to have them bound, as it makes a bulky volume and strong binding is necessary. The charge for binding, complete, is Rs.3-8.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 27th August 1897.

Nilgiris. SHOLUR, 19th August.—The rain has been persistent since last report, with little or no sun, the weather being unfavourable for flushing. Rainfall during month 8·77, making 35·92 to date. Highest and lowest temperature 68° and 59°. Grains.—Still dear. Labour.—Plentiful. Health.—Good.

S. E. Wynaad. PUNDALUR, 18th August.—Weather.—Since the 12th, we are having sun and rain, jackals wedding is the talk among children. Last night, from 7 to 11 P.M., we had very heavy showers. To-day it is very hot. Crops.—Owing to the break in the weather the tea that was backward in flush is beginning to flush rapidly. Grain is getting dearer and affecting us severely. Plant-diseases.—Leaf-rot among the crowded plants. General Health.—Very good. Labour.—Excess.

Coorg. POLLI BETTA, 18th August.—Weather.—Rainfall for week ending 14th instant, about 11 inches—one of the heaviest weeks there has been. Heaviest fall on 7th, 3·50 inches; next heaviest on 9th, 2·65 inches; but rainfall differs greatly according to situation, many circumstances influencing it. Plant-diseases.—It is to be hoped that the leaf-disease will come and that we will be over with it by October. There are several individual trees to be noticed in different fields very bad with "leaf," but the coffee on the whole is still looking extremely fine. Labour.—Coolies are crying out about the high price of grain.

Nellampathy, British. 18th August.—Weather.—Rain for week, 8·60; to date, 134·87. Yesterday began a heat which looks like continuing for some time, and so long as it does not continue too long, everyone is thankful. There has been rain every day (more or less) since 23rd July. Plant-diseases.—Leaf-disease seems to be getting worse, and it was bad enough in all conscience before, a little leaf rot showing here and there. General Health.—Bad. The heavy weather we have just had has knocked up a lot of coolies, and I have never found so many ailments at this season. Labour.—Fairly plentiful, of all sorts and sizes. Interesting

Items.—Mr. Rees, Resident for Cochin, and Mr. Browning are up here on a visit, and intend seeing a little of "our 'appy little 'ome."

North Wynaad.

MANANTODDY.—*Weather.*—After a July of average rainfall for Forest District of 55 in. and many moresunshiny days than usual during that month and up to 2nd instant, a regular "good burst" set in on 3rd and worked itself up gradually into a furious state, but for the last three days the weather has been mild with rare intervals of sunshine. Rainfall for first week of this month, 20.50 in.; for second week, 28.45 in. The total for the year to date of 162½ in., already exceeds the average for a whole year. Until the last heavy burst, which in two weeks has given 11 in. above the total average fall for August, the monsoon had been everything that could be desired for agricultural operations generally. *Plant-diseases.*—Coffee is very healthy, with the exception of a little "black-rot" in wet and clayey parts, and has been somewhat "wind-blown" by late heavy gales in exposed situations. *Labour* is plentiful. *General Health.*—Fairly satisfactory. *Grain.*—Working up to famine prices, as the local grain crops were sent out of the district in the fine season. *General Remarks.*—It is rather remarkable that my records of monsoon rainfall show that the heaviest falls happen near or about full moon. This monsoon has been no exception to what seems almost a general rule, i.e. :—

Full Moon.		Heaviest daily fall	
June 15th	...	June 18th	Inches 8.20
July 14th	...	July 11th	" 6.35
Aug. 12th	...	Aug. 9th	" 7.65

I got another bit of my *English Mail* to-day. No *Madras Mail* of 9th inst. yet received—thanks to Post Office disorganization due to floods, &c.

GENERAL NOTES AND ARTICLES.

Estate blankets.

We have received from the Bangalore Woollen Mills a sample coolly cumblly 7 × 3 × 9, priced at the very moderate rate of one rupee eight annas, so as to compete with the bazaar article. The pattern of the bars at either end can be altered to suit the different estates. For the price, the cumblly sent us gives excellent value, but we think that a slightly thicker article, even if more expensive, would prove more popular.

Peripatetic accountants.

It needs no elaborate argument to demonstrate that the majority of planters are not professed accountants, and that as estate book-keeping, if done in proper business-like way, is not easily mastered by amateurs, it would save proprietors much of their manager's time were these released from wrestling with figures. The easiest way to do this has already been suggested by a correspondent, i.e., to employ duly qualified accountants to make monthly visits round the district and keep the estate books in trim. The remuneration must be, we fancy, in the shape of fees from the estates visited, with a guarantee from the local Association that the total salary shall not be below a certain fixed minimum. In one district at least the idea has "caught on," and we should not be surprised to hear the subject brought forward at the next meeting of the Nilgiri P. A. If a fee of say Rs.5 per mensem per estate were arranged for, the income realised by the

accountant would, in this district, be very respectable indeed.

Mate: a possible rival.

Some over-zealous friends of the great coffee and tea planting industries have essayed to instil a fear into their supporters that coffee and tea may yet become drinks of the past. And all on account of "maté" which the Paraguayans have, with praiseworthy but unsuccessful enterprise, been trying to induce the public to consume. "Maté" is an apology for a tea prepared by the Indians from the leaves of the *Ilex paraguayensis*, which are dried and ground in mills and sold for export. According to Dr. Caminha, maté is less exciting than tea or coffee, about as stimulating as green tea, and more diuretic than coffee. Some think that mateine, the active principle of maté tea, is the same alkaloid as caffeine, others that it is different, because it acts directly on the muscles, whereas caffeine only acts upon them through the nerve centres. Be that as it may, mateine would appear to increase the vital activity in every way; and it does not cause sleeplessness, even when taken in a large quantity.

Red ants.

With reference to the proposition made that red ants might be introduced on to cocoa estates as destroyers of the insect pests that injure the cocoa trees, noted in our last issue, Mr. J. Green, of Pundaloya, utters a note of warning in the *Ceylon Observer* as to the dangers of such a practice. He says :—

Although they will undoubtedly destroy many small insects, on the other hand these so-called "tigers of the insect world" (would not "wolves" be a better simile?) are most distinctly guilty of encouraging the presence of some of our most injurious insect pests. Their relations in connection with "scale-insects" and aphides have often been misunderstood. This same "red ant" was once before largely introduced into the coffee districts by some ingenious individual under the mistaken idea—based upon imperfect observation of its habits—that it would prey upon and finally exterminate the coffee-bug. This was an excellent arrangement for both the ants and the bugs; but the result—from the planter's point of view—was not so satisfactory. Firstly, the coffee was rendered almost unapproachable by the ferocity of these supposed allies; and, secondly, the "bug" increased and waxed fat, if possible, faster than before. "Scale-bugs" and aphides are to the ants what herds of milch cows are to us: and, as such, are tended and cultivated most carefully. In return for the plentiful supply of "honeydew" yielded by their "insect cattle", the ants will defend them from their natural enemies. I have often noticed that "scale-bugs" attended by ants appear to be in a much healthier and plumper condition than those which are left to shift for themselves. Colonies of "scale-bugs" and "mealy-bugs" are often included within the nests of the ants; and, when the ants outgrow their quarters and migrate to other parts, they carry with them some of their cattle to form the nucleus of fresh herds. If the ants are to be got rid of after destroying the nests, search should be made upon the neighbouring branches for any bugs, and these also destroyed; otherwise, the ants will surely make their way back to the source of attraction. The fact that the small "sugar-ant" (*Plagiolepis longipes*)—one of the weakest looking of its kind—can attack and overcome the ferocious "red ant" (*Ecophylla smaragdina*), is a most curious and interesting one—and rather mysterious too. For the smaller ant, to all appearance, without any efficient means of offence or defence, its mandibles are comparatively small and weak, and it is unprovided with a sting. But the fact has been observed more than once that I have been told by one very careful observer of a regular warfare conducted between the smaller and the larger species, in which the former invariably come off victorious, to the gradual extermination or expulsion of the latter. I have myself seen a large cockroach speedily collapse under the attack of three or four of these weak

looking little ants. Possibly these natural enemies might be employed with advantage in ousting the 'red ants' from any particular locality where their presence was inconvenient.

UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA.

ANNUAL REPORT, 1896-97.

THE following was inadvertently omitted from our last issue:

GENTLEMEN,—The year 1896-97 has been an eventful one to the U. P. A. S. I. Indeed, one of the most gratifying indications that this Association meets a need, and is likely to render great service to planters in Southern India, lies in the fact that each succeeding Annual Meeting attains greater importance than that of the previous year.

It will be convenient to give in the first place a brief *resumé* of the subjects discussed at the last Annual Meeting, with notes of what has since been done in respect to them. In some instances, finality has not been reached, but one or two matters may be regarded as completely disposed of.

Proxies.—A form of proxy was adopted last year; as the rule concerning notice in respect to proxies seems to provide for a needlessly long notice, and might well be re-considered, the matter is to be brought up for re-consideration this year.

Constitution of the Association.—There has been much discussion as to the advisability or otherwise of admitting individual members and giving them power to vote. This is one of the chief subjects for consideration at the present meeting, for it re-opens in great measure the discussion of last August as to the constitution of the Association. Different schemes have been propounded, and at the present meeting Mr. Acworth, who has from the first displayed great interest in this question, will open the discussion, and put forward a revised scheme. In this connection, too,

Registration has been suggested, and if certain technical difficulties can be surmounted the U. P. A. will no doubt soon take rank as a corporate body, the various District Associations having, on the whole, received the suggestion with favour.

U. P. A. Funds.—Accounts will be presented, showing how the General and Reserve Funds have been utilised, and how they now stand. The expenses of the Address and Casket presented to Her Most Gracious Majesty in commemoration of her "Diamond Jubilee," of a reference to Counsel *in re* Act XIII. of 1859, and of the printing of numerous copies of the Report of the South of India Planters' Enquiry Committee, are written down for the present against General Funds, but these are so reduced that the Association will have to consider the expediency of meeting part, at least, of the above out of the Reserve, or by a special subscription. Some subscriptions towards the cost of Casket, &c., have been paid in. It is for the Association to decide what shall be done with them.

Railway Extension.—The Resolution passed last year was put before the proper authorities. It has not been thought desirable to press this point, or that of

Roads and Communications during a year of Famine and Plague, when Government's financial resources have been greatly strained. There is no lack of sympathy, but latterly the Government has not had the power to help, though it has certainly had the desire.

Tea Prompts, &c.—On the advice of persons competent to decide, this question has been dropped, as any alteration in the present method would be detrimental to the interests of the producer. Coffee is, however, on a different footing, and the decision respecting tea prompts does not debar the Association from considering what improvements can be made in conditions, &c., as regards Coffee. During the year a circular was issued showing how this subject had been taken up at Home, and

coffee planters will have seen that their interests are being watched.

Government Cinchona Gardens.—The representation made to the Government of Madras has, thanks largely to the earnest support given to it by the honorable Planting Member, borne fruit. Government lately advertised for tenders, and it is hoped that planters will now find an occasional market locally, when the supplies raised on the Government Cinchona Gardens prove insufficient.

Malarial Parasite.—The Resolution on this subject was duly forwarded to Government, but progress was checked by the abnormal strain put upon the Medical Department by Famine and Plague. Surgeon-Major Ronald Ross has, however, proceeded with his investigations, and a brief paper by him has been submitted for consideration during the present meeting.

London Chamber of Commerce.—Mr. Mangles having accepted office as joint representative with Mr. J. C. Sanderson, sundry matters have been intrusted to his care. He has not yet had time to deal thoroughly with any of them, but there is every ground for hope that Mr. Sanderson and he will render valuable service, the fruit of which will become visible ere long.

The Duty on Chemical Manures.—Government has not yet replied to the representations of the Madras Chamber of Commerce and the U. P. A.

The Planting Member of the Enquiry Committee.—Final settlement of the question of this gentleman's expenses was advised to District Associations during the year.

Statistics.—A few of these have come in; all that are ready will appear in the annual book of proceedings. They show a very decided advance on any statistics previously published.

Decrease of Consumption of Coffee. Adulteration of Coffee.—Papers circulated during the year showed that the wishes of this Association had been to a great extent anticipated by the London Chamber of Commerce. Steps have already been suggested for popularising London as a Coffee port, and Messrs. Sanderson and Mangles will no doubt take care that the subject is not allowed to drop.

Advances.—Act XIII. of 1859 has come in for fresh criticism, and an important ruling in connection therewith has been given by the Madras High Court of Judicature. Details will transpire during the discussion of the subject.

Coffee Scale and Lady Birds.—Mr. H. O. Newport has supplemented his valuable researches by publishing a very interesting pamphlet containing details, and stating his conclusions. It is discouraging to know that very few planters have given the practical support that reveals itself in a demand for copies of the work. Thanks to the Hon. Mr. Hodgson, however, Government has given the subject some attention, and though there appears to be no hope that the services of Dr. Koebele, who has done such good work in Hawaii, will be available, it has been suggested that the Association should consider if it would not be advisable to try to obtain the assistance of some other entomologist, to pursue scientific investigations into this and cognate subjects.

Forest Reservation in Mysore.—The Mysore Government has not replied to the representations made to it.

The S. of I. Planters' Enquiry Committee.—The Report has been issued, and numerous copies have been circulated with a view to a thorough discussion. The general conclusions of the report are strikingly favourable to the contentions of the planting community; the recommendations made will come up for

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TERMS MODERATE

discussion and criticism at a later stage of the present proceedings.

Famine Fund.—Collections on this account have totalled the very satisfactory sum of Rs. 5,628-2-0.

Reserve Fund.—A total of Rs. 10,575-12-0 has been collected, and so far only Rs. 1,750 has been spent (the amount of the expenses of the planting member of the Enquiry Committee). The enlargement, the utilisation and the investment of this Fund are among the subjects to be brought before the present meeting.

"Planting Opinion."—Arrangements have been made whereby a useful channel of communication with individual planters has been placed under the control of your present Secretary. The proprietors of the above paper, which is now issued weekly, are willing that it should be the recognised organ of the U. P. A. S. I. if this Association desire it to be so, and a feasible plan of working be agreed upon.

The accounts of income and expenditure during the past twelve months are laid on the table for your scrutiny and approval.

In conclusion, your Secretary desires to express his thanks for the cordial and courteous assistance he has received from the various Honorary Secretaries of District Planting Associations. Owing to the raising of funds for Famine purposes and the Reserve Fund, the work thrown upon these gentlemen must have been unusually heavy, and they have earned a hearty acknowledgment of the manner in which they have assisted your Secretary to prevent the work and the records of the U. P. A. from falling into arrears.

LETTERS TO THE EDITOR.

WANTED: A DUTCH INTERPRETER.

DEAR SIR,—Had you in your issue of 7th inst. explained the meaning of some of the terms ("Bow" for instance) employed in the letter headed "Planting in Java," it would have made that letter more interesting and more understandable.

I am, Dear Sir,

GADBROOK, NELLACOTTA, }
13th August 1897. }

Yours truly,
W. HAMILTON.

[Can any of our more learned readers oblige?—Ed.]

SOME QUERIES.

DEAR SIR,—Why are the notes by "Planter's Wife" now omitted? Why has the *Planting Opinion* been turned into a weekly paper? It was far better as a fortnightly, and I have heard several of your contributors and subscribers say they are going to discontinue their subscriptions when their present subscription is finished.

If you ask your readers to send you a post-card saying whether they prefer a weekly or fortnightly *P. O.*, I think, you will find I am right in saying the latter is the most popular.

Yours faithfully,

11th August 1897.

"NORMANTON."

[Our last number has answered your first query. Regarding the weekly issue, we hope to so enlarge and improve it that we trust it will become a greater favourite than ever. A little patience, please, and more support is all we ask!—Ed.]

The Wynaad and the Planting Industry of Southern India, by FRANCIS FORD, Re. 1.

The Planting Directory of South India, Rs. 1-8.

Report of Observations of Injurious Insects and common Crop Pests during the year 1883, with methods of Prevention and Remedy, by Miss ELEANOR A. ORMEROD, F.R.Met. Soc., &c., Re. 1-8. Apply to

"PLANTING OPINION" OFFICE,
3, ESPLANADE ROW, MADRAS.

JAVA COFFEE AND E. LITHOSPERMA SHADE.

DEAR SIR,—I am afraid I cannot answer "One Interested" query as to whether I can give any further particulars about the remarkable success of the Java coffee under dadap (E. L.) shade but I can quite believe that the shade tree has a good deal to do with its success, from my own experience.

The glowing accounts I heard from a friend of Java coffee and E. L. shade induced me to try it as a forlorn hope for saving the coffee, and as coffee *except* under E. L. has gone to the wall although heavily manured with cattle manure, and coffee under E. L. has come round and grown into fine bushes from mere skeletons *without manure*, I think there must be a great connection between the flourishing coffee and the shade tree. The recovery of the coffee naturally led to an inquiry into the cause, and as the shade tree was the only visible cause, the loppings were analysed, and I think the analysis explains the success. The analysis also lead to the employment of the loppings as a green manure where previously they had been allowed to rot as a mulch, causing of course a great loss of ammonia. The recent discoveries of the connection between nodules and nitrogen led to the discovery that E. Lithosperma possessed the power of stimulating bacterial activity and hence of assimilating atmospheric nitrogen to a very unusual degree. An unlimited supply of nitrogen gratis, with the unlimited supply of minerals in the soil, leads to coffee cultivation without manure, which I believe to be as scientifically correct as it has proved itself practically possible. An interesting fact that proves the advantage of E. L. as a coffee shade is that the attempts to plant Arabica coffee in this neighbourhood during the last few years have all ended in failure, except the E. L. shade clearings which are still to the fore and are likely to continue to flourish.

I hope shortly to send you figures of the weight of an acre of loppings per acre; they will still further explain the success of the tree.

ARIENKOW, SHENCOTTAH, }
13th August 1897. }

Yours faithfully,
B. NELSON.

COFFEE CONSUMPTION IN INDIA.

SIR,—It has often occurred to me that there must be a considerable consumption of coffee in India. We have statistics which show the quantity exported annually, and an attempt is occasionally made to arrive at the produce of each district. In one district, when I had the means of checking the returns by the exports, I found these very much out. As to the portion which never goes out of the country but is consumed therein, I have never seen any return. Estimates may have been made, and it would be interesting if you, sir, or any of your readers have if they could be produced in the columns of the *P. O.* for the benefit of the planting community and other readers.

That a large quantity is used in India, I think there can be no doubt. Talking to a Mussalman the other day about coffee, I questioned him as to what extent it was used by his people. He immediately said they all drink coffee, and to emphasize the extent of its use, he added, "from here to Calcutta they drink it," and many, besides Mussalmans, have their morning coffee. The native consumer is, I believe, content with a very wishy-washy infusion. Still, seeing the numbers that use it, the annual consumption must aggregate no small quantity. Take for instance 1,000 tons and give each consumer only one pound per annum. You would have 2,240,000 consumers—a handful out of a population of some 300 millions, not to mention Cabul. One pound per annum is of course an absurdly small quantity to allow per head, but I use these figures simply to show at a glance how readily a large quantity of coffee could be accounted for. Make the consumption per head of the 2,240,000 six or seven lbs. and you have 6,000 or 7,000 tons, to about the production of Coorg. And who would say that is an excessive estimate? In fact it looks a ridiculously inadequate

mate, if we believe so many of the native population drink coffee. I must admit that the question is a puzzling one, for where does all this come from, which coffee statistics never seem to take into account?

The greater part I reckon is native-grown kinds, as it is the native and inferior sorts that are mostly used. Garblings, black, and other refuse sorts are generally sold on the Coast and on the interior at the end of the season. A great part is sold to the Arab traders who visit the Coast each season, part is shipped to Europe, and part, I suppose, goes into home consumption; but the whole is but a trifling part of the crop.

One cannot help thinking that as much as 6,000 or 7,000 tons of coffee at least must be consumed in India, and yet this seems too small a proportion of the season's crop not to be noticeable. Does it all come from the coffee districts, or have the natives a few acres in the shady parts of their gardens all over India which they use to supply this large consumption?

A HARD NUT.

LEAF DISEASE.

I.

DEAR SIR,—We are told that the plague and other diseases which live in the soil and air breed freely in a humid warm atmosphere, but that a certain number of degrees of heat kills them.

Leaf disease generally appears after the monsoon, and at a certain time of the year when the ground is humid and warm (earlier in low warm than in higher and colder localities). Why should we not call Nature to our aid and see if her counter-check, "Heat," can help us in destroying in the hot weather the germs of the disease which at that time of the year are all dormant and lying on the ground, till the season for revival comes round again.

Last December, when the weather was getting dry and leaf disease seemed to be going off, some unlucky showers about Christmas brought on a renewed and virulent attack, some estates suffering terribly, the damp warmth set up perhaps conducing to the revival of the disease germs.

The plan I propose, though not a new idea in one way, is no doubt startling, and not practicable at present on the majority of estates, but can be experimentally tried in parts of some old estates, with ordinary shade where the coffee (especially Chick) is umbrella-shaped and so tall that one can almost walk upright under it, and where there is a fair quantity of *Dargoo* or dry leaf and prunings on the ground.

In such parts (the more isolated the better), I propose that a picked gang of coolies, under European supervision, run fire through the place, having previously taken precautions to remove large quantities of shade loppings and bits of wood lying on the ground, (which latter might catch fire and go on smouldering,) and sweeping away the dry leaves for about one foot all round the stem of the tree.

Fire running through two or three inches deep of *Dargoo* does not ascend much higher than six or eight inches, and is soon over, so would not create enough heat to affect the branches and leaves of the tall tree. If there be too much dry leaf on the ground, some can be removed and carefully burnt in open patches and on the roads.

I have seen a light fire run along the ground in ordinary coffee and only scorch a few of the lower leaves. I have also seen coffee burnt out to all appearances, but after being sawn down, send up luxuriant suckers which kept free of leaf disease, while the coffee surrounding had a touch.

This drastic remedy would not do in young clearings with much timber about or where there were a great many supplies. In time the timber could be cut up and buried in renovation pits or trenches.

The coffee being tall, the coolies careful, and armed with suitable green boughs for damping the fire, if too furious, there

is no reason to fear burning the trees in any way. Fire paths could be swept, and a block at a time done.

Of course if the plan proved successful, or the disease mitigated considerably, and before it could be generally adopted, "umbrellas" would have to be the order of the day, and why not "umbrellas," they bear just as well, and in some instances better than ordinary low topped coffee. No lower primaries (which generally don't bear much) being in the way, cultivation of the soil is facilitated.

I have mentioned that the more isolated the field or patch of coffee chosen for experiment the better, because there would be less chance of the disease being communicated from the rest of the coffee, when the season comes round again.

I shall be interested to read "planters' opinions" on this plan of using under the coffee a natural remedy.

BENKI.

[A short time ago we advocated in these columns a very similar, but not so drastic, measure as that urged by you.—Ed.]

II.

DEAR SIR,—A friend of mine has just returned to Bangalore, after having visited some of the coffee estates, and he gives a very gloomy account of the havoc wrought by leaf, and gives it as his opinion that unless something is done, and that quickly, to check its spread, that coffee in the South will be a thing of the past. He also stated that none of the coffee examined by him equalled the coffee grown in and near Bangalore.

I do not profess to be an authority, never having seen a coffee plant until I started a garden at Doddaballapur, and you may remember writing to me some two years ago for particulars, having, as you then stated, heard good accounts of the growth of the plants. Regarding this, I shall not say much, except that had I not under advice lopped my plants they would now have stood from 10 to 12 feet. Anyhow, I lopped at 5 and 5.6. The primaries are over 4 feet in length. Last year I plucked 8 cwt. the acre from my 1894 plants. This year the yield will be equally good, with not a sign of leaf. Now as regards leaf itself, my experience may be useful.

When I planted out my coffee, I gave each tree half a basket of cattle manure; that was in 1894. In 1895 I manured with bone and poonac and had leaf. This attacks every plant under shade, without, however, touching over 2,000, which were in the open and cattle manured, though these were planted not four feet away from those which were so seriously attacked. Last year a gentleman who wanted to purchase the garden, but who has since purchased another property of mine, closely inspected each tree, freely turning over the leaves, and by his having done so expressed surprise that there was no indication of leaf, which he saw was then very bad in other plantations. Fortunately for me, however, just as he was leaving the gardens he saw one tree with the disease. He pounced on the leaf and shouted "leaf," explaining at the same time that he did not wish to take off from value, but what he was surprised at, when he had so minutely examined a very large number of plants, was that I was free. Anyhow, my next visit clearly satisfied me that it had spread, for then, instead of only one plant, no less than 13 had it badly.

My next step was to open out the roots and work in a full basket of cattle manure. Three chatties of manure were given to each plant and the roots remained exposed until the third day, when the earth was thrown in. The disease disappeared at once, without going the round as it did the year previous. My trees in the open again escaped and they have thus not once been visited. From my experience with leaf I have drawn three conclusions, which may be briefly stated to be:—

1st.—That bone and poonac may have something to do with the disease, as since I have used the cattle manure I have not been visited.

2nd.—That shade is not wanted under irrigation, and only

very thinly where coffee is grown under the usual conditions of rainfall.

3rd.—That trees should not be topped so low as two, three or four feet, but allowed to grow to from five to six feet. I always thought that plants topped as above would probably, by highly manuring, give excessive crop for a given number of years and then die out, through over-bearing, or some other disease.

My idea has always been, ever since I took to coffee, that with small trees—the manure (bone, pounac and other artificial manures) would not tend to long life.

There may be some who will ticket me a duffer, but I cannot help that. I know absolutely nothing of coffee; but if my experience proves useful, or if any hint can be drawn from it, useful to the planters, I shall have served the purpose for which I have written.

I believe that the planters have so far been conservative. The older planters have given advice in good faith to the younger. These in turn have passed on the ideas of shade, lopping, artificial manures, until the very care and attention so long paid are gradually killing out the plants. This much I do know. Planters differ so much at the present moment that if a young planter was to get the advice of say six old and experienced men, he would find it difficult to understand what he had to do to get up a garden.

The point that struck me from the first was why not allow coffee plants to grow up as nature intended that they should? Surely it was not intended that coffee, a fruit bearing plant, should be treated differently to all others.

We take no special care of our mango, orange, guava or other trees, and I know as a fact that coffee will grow a good size and bear well if left to nature, having had in the garden which I have recently sold trees over 12 to 15 feet in height and bearing year in and year out from 3 to 4 lbs. of berries. These trees were never watered or attended to except in the matter of manure, and they were over 16 years' old.

I sign my name, which you can if you like publish, but I must ask planters to remember that I have gained the little experience I now possess since I started as a planter. That I have followed no one's advice, but trusted a good deal to nature to do for me all that I could not understand. A crop of 8 cwt. in the second year and the same, if not a better crop, free from the disease and borer in the third year speaks for itself.

I can supply in any quantity. Allow all the trees to grow to say 6 feet and over—in fact to thoroughly investigate leaf disease I don't believe a specialist necessary. I am sure we have sufficiently experienced men to trace; take for instance Mr. Nelson, who could locate the cause and thus bring back coffee to its old condition.

Yours truly,

J. PARTRIDGE.

BANGALORE.

[The rest of your letter we have omitted, as bearing too closely on questions which we reserve for our advertisement columns. If you could, however, write us again on this subject, i.e., your ideas of discovering the causes of leaf disease and borer, by investigating the conditions of coffee where these pests are absent, we should be glad to publish the letter.—ED.]

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppinge, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. Germination guaranteed.

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE.

COFFEE.

Local consumption.

A correspondent draws attention to the very profound ignorance prevails on this subject, i.e., the consumption of coffee in "Hard Nut" roughly guesses it to be from 1,000 to 6 or 7 lbs. per head, is excessive. It is far more that the actual number of consumers is greater by far the 2,240,000 assumed for convenience in calculation. Without any reliable data it is of course quite impossible to make any accurate estimate, but we think we err on the side of safety, if we venture to place the Indian consumption of coffee at 20 to 30,000 tons per annum.

King Coffee.

The sweeping assertion made in the *Ceylon Observer* that coffee is no longer "King" in the East, and promptly denied to us, has been taken up by the *Calcutta Planter*. The most imperfect idea of the conditions under which cultivation is carried on in South India. Of the 3 cultivated plantation acreage in the Madras Presidency, Coorg, Mysore, Travancore and Cochin, 283,432 acres of coffee, while of tea there are only 16,277 acres. Madras districts, the Nilgiris and Wynaad alone produce tea, and the increase in the former district is certainly great deal slower than the increase in coffee, though the reverse in the Wynaad. In Travancore the approximately three times as much tea as coffee, Coorg, Mysore and Cochin tea is only being talked about nothing more. Much capital has been made out of small and decreasing exports of coffee, but it is ridiculous to suppose that these represent the total crops. According to authoritative valuations on the South Indian plantations the amount of produce consumed in the country is about 37 per cent. of the whole exports, in order to secure a profit of only 5 per cent. on the capital invested.

Coffee is undoubtedly no longer as flourishing as of old days before leaf disease made its unwelcome way to the land, but for the next many years at least it will remain King, though various heirs presumptive cast eyes on its crown.

The Market.

The better demand notice of the week has continued, says the *Review* of 24th July, and a larger business has been done than for many weeks past. The market for Brazil king has been particularly strong, and the price of good average Santos cost and freight, has advanced 5s. from the lowest point. This has been partly reflected in the terminal market, a report of frost having occurred in the interior of Santos caused an advance of 2s. 6d.; the highest point has, however, been maintained, and another report contradicting the first has led to a fall of 1s. per cwt. Such rumors are often circulated at this time of year just before the flow takes place, and it is quite impossible to place any reliance on them. It must, however, be admitted that quotations are very low, and that whatever takes place with the crop there is not much margin for lower prices, which present rates must tend to stimulate consumption in America and also on the Continent. There is no reason why consumption here should not also improve if grocers reduce their lowest price to 1s. per lb. or even less.

they could easily do, leaving a good margin of profit buying fine Santos, between 40s. and 50s., equal in value to what they were freely buying in the early part of this year at 75s. to 85s. The auctions have again obtained only small lots of undesirable quality for the part; the few parcels of good home trade sorts realised full rates.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended 17, 1897.	Tons. 267	Tons. 245	Tons. 471	Tons. 270	Tons. 14,033	Tons. 11,492
For the 28 weeks ended 17, 1897.	8,125	8,366	11,685	12,881	...	...

OFFICIAL STATISTICS OF THE COFFEE TRADE OF THE UNITED KINGDOM.

	1 Month ended June 30.			6 Months ended June 30.		
	1895	1896	1897	1895	1896	1897
Imports	75,382	50,812	63,744	569,498	495,385	557,157
Consumption	17,157	19,842	17,660	132,109	127,850	129,463
Exports	43,521	47,627	49,975	241,022	264,583	212,447
Deliveries	60,678	67,469	67,635	373,131	392,433	341,910
On June 30	285,756	246,755	370,139	...	...	...

us the H. & C. Mail:—

Warning for Planters. The Society of Public Analysts have investigated and reported on the stuff sold off in "coffee palaces." They find that the infusions sold at all of these establishments in London contained scarcely any at all.

SCIENCE AND COFFEE.

BY THE LATE MR. WILLIAM PRINGLE, M.S.C.I.,
FORMERLY AGRICULTURAL CHEMIST IN COORG, SOUTH INDIA,
TO MESSRS. MATHESON AND CO.)

(Reprinted from the "Madras Mail.")

RE.—These papers are being published in pamphlet form: register with Messrs. Addison & Co., Mount Road, Madras.

CHAPTER VIII.
THE COFFEE BORER.

THIS insect is the larva of an elegant beetle generally known as the "fly" from its likeness to a horsefly or wasp. Scientifically it is one of the Coleoptera, of the genus *Clytus*, and is represented in America by the hickory tree borer, and locust borer. The generic name *Xylotrupes*, signifying wood borer, has also been applied to this insect, and if people are not satisfied with Dunning's name *Clytus coffeophagus*, I would suggest the name *Xylotrupes coffea indica*, simply meaning the borer, India, which leaves the question of sub-order and genus open. But planters are very little interested in names, a beetle which has wrought such havoc, killing off estates, decimating others, and even in those most free from it causing an appreciable loss, is to them the "coffee borer" in larva state and the "borer fly" when it has developed into a beetle. During my four years' residence in Coorg, I have been collecting statistics of damage done by borer and experimenting with remedial agents. I have been successful beyond

anything I hoped for, not only in unravelling the history of the beetle, but also in applying remedies. It is easier to deal with than leaf disease, *Hemeleia vastatrix*. It is possible in from three to five years to reduce the losses of the trees on the estates by treating the trees for leaf disease and borer simultaneously, by from 50 to 75 or 80 per cent. calculated on the present loss. More it is useless to expect, as a great many trees die out from overbearing and other causes. The following is an approximate statement of the trees ripped out, and entered as "Borer" in South Coorg from estates under European management:—

Year.	Rainfall inches.	Crop cwt.	Per cent. of trees on acreage.
1885	62.31	5	8.3
1886	57.82	3½	6.9
1887	71.00	4½	7.0
1888	50.66	2½	8.8
1889	65.98	2½	8.9
1890	50.68	2	8.5

Neither the average crop nor the rainfall appear to have much to do with borer failure. But when the details are examined, a very close connection is found to exist between the weather and both crop and borer. I cannot in the brief space allowed me fully discuss the meteorological features of the question in this paper, but will just say that when the number of sun spots were at the maximum, the crops were good; as the number decreased so did the crops, and as they are now on the increase, crops will probably prove good till the maximum is again passed. For the purposes of this paper we will consider that the average of the various styles of planting give 1,500 trees per acre original planting. It takes fully three years for supplies amongst old coffee to come into bearing, and I would not be far off the mark if I said 50 per cent. fail in South Coorg. However, to carefully understate the case we will suppose all to come on. Then the land out of bearing per acre of cultivated coffee was:—

In 1887 equal to	... 22.2 per cent.
" 1888 "	... 22.7 "
" 1889 "	... 24.7 "
" 1890 "	... 25.2 "

All this is paying taxes, absorbing work and manure, and taking the best energies of our planters to prevent it increasing. The insect was the subject of Government inquiry some years ago, when Dr. Bidie investigated the matter. He, however, had not the opportunity to sit down and work out its life history, or probably his work would have been as complete as that of Marshal Ward in regard to *Hemeleia vastatrix*. In 1887, in the month of May, I obtained my first specimen of beetle, and I soon found that as far as the estates with which I was connected were concerned, it caused greater destruction than leaf disease, in spite of their being under shade. I began a careful study of the life of the insect and, though one or two minor points are still undecided, on the whole its history is fully worked out. In the central district of the Bamboo the beetle appears later than in the hot eastern district, but sooner than on the ghats. My remarks apply to the central district. After the first or second week in June, depending on the monsoon, the beetles disappear. Stragglers are to be found all the year round, but it is not till the end of August that there is any certainty of finding specimens of the autumn flight, and it is well on into April before the spring host appears. The maxima are two, one at the end of May, one at the end of October; the minima occur in January, February and July. To make the influence of the weather on the beetle's development clear, I append a table drawn up from personal observation:—

Month.	Weather.	Temperature	Beetles.
January	... Dry	... 60° to 99° Fh.	Very scarce.
February	... "	... 50° to 90° "	"
March	... Showers?	... 55° to 90° "	Scarce.

Month.	Weather.	Temperature	Beetles.
April	... Showers	... 66° to 90° Fh.	Few.
May	... "	... 75° to 95° "	Plentiful.
June	... Monsoon	... 60° to 70° "	Few.
July	... "	... 60° to 70° "	Very scarce.
August	... "	... 70° to 80° "	Scarce.
September	... Heavy showers	... 65° to 90° "	Few.
October	... "	... 65° to 90° "	Plentiful.
November	... Showers?	... 70° to 85° "	Very plentiful.
December	... ??	... 55° to 85° "	Few.

Where a note of interrogation follows the weather remark it means that the showers were uncertain. There is occasionally a much greater variation in the temperature than that given; for instance, in May I have known the thermometer to be over 104° in the shade, and I have in January seen it down to under 40° Fahrenheit. Broadly speaking, the temperature represents the averages of the maximum and minimum observations which do not, as a rule, vary in South Coorg more than five or ten degrees from those given. A consideration of the foregoing explains why shade (recommended by Dr. Bidie who saw its good effects on the Polli Betta where it had been planted by Mr. Minchin, who, I am informed, saw its good effect in Munzerabad) is so useful in retarding borer development. The mean minimum temperature must not fall below 65° Fah. or the development of the beetle is retarded; and shade by shutting out the sun's rays lowers the temperature. The eggs if kept at a temperature of 36° Fah. for 24 hours are all killed; few resist a temperature of 40°, but if the temperature is maintained at from 80° to 90° almost all the eggs will give forth larvæ in about ten days. Hence, when a very dry season with hot east winds occurs borer failures are more numerous. It is also the reason why borer has been so much worse in the Bamboo districts than in the forest and ghauts, and is the chief reason why shade is necessary in the hot eastern districts. The beetle when depositing its eggs selects a crack or crevice on the sunny side of the tree and avoids that upon which the monsoon rain beats. Every shower destroys the eggs which have not been so placed that there are kept dry. Shade does great good by retarding the development of the eggs, so giving the trees a greater chance of being freed from them by the rain. To satisfy myself as regards the influence of moisture I conducted a series of experiments on the influence of moisture on the development of the eggs, which I will briefly describe. Twelve borer trees taken out in May were chosen for the experiments; they were as equal as possible in size; the primaries were cut off. No. 1: Four of the stems were placed standing, in a dish with soil up to the old ground level, and on the top of each was placed a pad of wool. The whole was inclosed in a muslin cage which was kept about one foot clear of the trees. No. 2 was the same as No. 1, only the pad of wool was omitted. No. 3 was the same as No. 2. In Nos. 1 and 2 the soil was kept constantly damp, and in No. 1 the pad of wool also. No. 3 was quite dry. Previous experiments had shown that a temperature of 80° to 90° was most favourable to the development of the eggs, and I maintained that temperature as nearly as possible. No. 1 was damp all over. No. 2 was damp at the root. No. 3 was dry. A beetle escaped from one of the trees in No. 3 in August, and on the 9th September 1888, I cut up the trees—which were brought in on the 13th May 1888—with the following result:—

	Larva.	Pupa.	Beetle.	Totals.
No. 1	20	3	0	23
" 2	63	7	1	71
" 3	191	12	3	206

The average per tree is No. 1, 5.75, No. 2, 17.75, and No. 3, 50.12. This shows that a tree left lying on the ground during the monsoon, when it is kept constantly damp, does not develop many beetles; but such a tree, if left out during the dry weather, will develop almost all the eggs deposited on it. This points to the urgent necessity of burning the trees as soon as they are pulled out.

The greatest number of borer I have found in one tree follows: the trees were taken out on the 8th July 1887 cut up on the 8th September 1887:—60 borer (grubs or pupæ, 1 fly (beetle or imago), or a total of 83 in the various phases of development.

One beetle escaped before I cut it up, so there were all 84 borer in that one tree. This tree was carefully dried, an equitable temperature varying from about 65° to 70°. Under favourable circumstances the life history is as follows: The beetle deposits the eggs in a crevice of the bark on the sunny side of the tree; in about ten days the larvæ hatch, but it may require 15 to 20. The larva works on its side, cannot advance unless there is a resistance behind; the newly-hatched insect obtains from a projection or corner of the bark; in 24 hours or less the creature is buried under the bark. Once in the tree it advances, compacting the sawdust the matter it excretes, by admixture with a gummy substance, which, aided by the pressure of the insect forcing it against the wood it is devouring, becomes almost as hard as the surrounding wood, and fills the tunnel behind the insect.

This work goes on from three to five months, when the larva has reached its full development, the larva having advanced within about 1½ inch of the bark undergoes, transformation, entering the pupa stage. In this form it is covered by a transparent envelope, and lies with its head towards the entrance and the tail towards the entrance; it remains in this state until the temperature is suitable, probably about three weeks, when it undergoes its final change into the adult, which eats its way out. If the larva has not worked enough to the bark before changing it may fail to escape, being more wood than it can consume. From egg to beetle the average duration of the individual life is about six months. The majority of the race developing in May and October. As I have already exceeded my limit I must conclude, though I have not given a description of the beetle and borer grub, and merely an outline of the most important facts.

In a subsequent note to the *Mail*, Mr. Pringle adds:—In the 9th, in the article "Borer," there are two errors. I would be much obliged to you if you would kindly correct them. "average per tree in No. 3 is 51.50" (not 50.12) and "larva having advanced to within about ¼ (one quarter) inch of the bark." I may say the borer is sometimes found on the stems of trees barely 1 inch in diameter; in the forest there is scarcely one-eighth of an inch between the inner bark and the outer bark. In the letter signed "Gobra" in the 11th issue, the writer says he "considers the letters which appeared on the subject very interesting but rather theoretical." No doubt, but if theory did not work in practice would make but little progress. It is the duty of the technologist to bring theory to the test, and answer the omnipresent question "Will it pay?" That question followed me from an engineering works, through chemical manure manufactories, to my labours in connection with the cultivation of the plant. It is a practical question, and men must answer it practically. If the letters have only shown the plain which direction they can most profitably work at the questions, they will not have been written in vain. I heartily endorse the remainder of your correspondent's letter, which is very much to the point, and I hope there will be more of the penny wise and pound foolish policy of starving the estates. Good work and manure produce good results.

MESSRS. VEST & Co. have favoured us with a sample box of "Empress" Stationery, which they describe as their own production, the box having been designed and manufactured on their premises. In quality and value it is excellent. Fifty sheets of good green note paper and 50 envelopes (1 sheet and 1 envelope together under ½ tola) at Re. 1 is cheap enough for anybody.

TEA.

ipe leaf.

urious, considering the impossibility of making the best teas out of either immature or over-ripe leaf. It would perhaps serve a useful purpose if some of our experienced planting readers would give the public the benefit of their views thereon.

outh India.

Messrs. Arbuthnot and Co.'s Monthly Circular, which unluckily generally reach 10 days later than other home circulars, dated London, 16th July 1897, says:—

Only about 2,000 packages were brought to the hammer, for which an average of 6 per lb. was secured; whereas in May 6½ per lb. was obtained for 4,300 packages. This falling off in price is disappointing, but is principally attributable to the inferior quality of most of the offerings.

The majority of teas from Travancore were of a somewhat unattractive character, but those shipments which possessed desirable qualities were well competed for, Aneimudi, Isfield and Seafeld producing some of the best results.

From the Neilgherries and S. Wynaad consignments put forward were small. Tudor Hall sent a useful invoice from the former, but the others call for no special notice.

ome of our competi-
tors.

From time to time attention, perhaps inordinate, has been given to the Carolina, U. S., experiments in tea-growing. Everything has succeeded on the Summerille tea farm save one thing: and that is, the cost of production, which is stated by the American Secretary of Agriculture to be at least 8 times as high in picking alone as in Asia. Unless the oft-prophecied mechanical plucker turns out to be a practical reality (not the semi-useless hears arrangement), we are quite safe from that quarter.

In Java, however, things are very different and the planters there are striving might and main, and with very fair success to both improve and increase their output. In a Ceylon exchange we note that Mr. J. H. S. Davidson, nephew of Mr. S. C. Davidson, the inventor of the well-known "Sirocco" Machinery, has left for Java in order to superintend the erection of extensive orders for Sirocco Tea Machinery including a number of the newly patented automatic dryers, which machines have proved themselves unequalled in India during the past season. One factory alone about to be fitted will require machinery for 1,000,000 lbs. per annum. On one Indian estate alone this new machine dried over 700,000 lbs. tea last year, which in the London market averaged ½d. more than teas dried by other large tea dryers. Mr. Davidson will also take charge of the erection of a number of Davidson's Patent Rollers, Oxidizers, Downdraft and Updraft Siroccos, Sorters, Packers, etc., numerous orders for all of which machines have been booked for that Island. Mr. J. H. S. Davidson has been a practical planter and engineer for over eight years, and he will no doubt be able to give a lot of assistance to Java planters.

The Home Market.

INDIAN TEAS.—A fairly good selection of the more useful kinds was brought forward at the public sales, says the *P. M. Review*

of the 24th ult., and the market has shown more animation. Most of the Assam growths were of good average quality, and in consequence of the market being somewhat bare of the better medium and fine grades, competition was active and satisfactory prices were obtained. As the trade generally hold exceptionally small stocks of these teas, there is every prospect that firm prices will prevail for some time, and the demand will probably be quite equal to the supply until the arrivals are on a much larger scale. The Dooars teas now coming forward are on the whole better than the earlier imports, and as most of them possess fair strength they were well competed for and fetched good prices, especially the more useful sorts. The character of some of the Sylhets and Cachars has improved, and these kinds sold steadily at about late rates, while the Darjeelings are generally poor, and attracted but moderate attention at the comparatively low prices current. The prospects of a large and increasing supply diminishes, as it would appear, from the more detailed accounts of the damage done by the earthquake, that there will be considerable delay in the transit of the teas from many districts. At the public sales held on the 22nd inst. in Calcutta 19,000 packages were offered, and excepting for the fine teas, which sold at higher rates, there was no material change in values.

CEYLON TEAS.—With only a moderate supply on offer the values of Ceylon Teas have again hardened, and prices at public sale were generally in favour of sellers. In some instances, however, the quality showed a slight improvement, but where such was the case, although only to the extent of ¼d. per lb., as much as ½d. to 1d. was paid above previous rates. Fine teas are much wanted, and as only a very limited quantity worth over 1s. is to be met with, the few parcels offered attracted general attention, resulting in keen competition at greatly enhanced values. The lower grades of both Whole and Broken Leaf are still cheap, and a good business has been done in them. At the public sales 22,200 packages were offered, of which about 1,500 were withdrawn.

THAT MASTERFUL YANKEE.

THE writings of Mark Twain are full of instruction as well as humour. Possibly you have read that wonderful story of his called "A Yankee at King Arthur's Court." The hero is a skilled mechanic, the foreman of a great factory in America. He is accidentally killed, as we would say; but, instead of getting his body deposited in the grave, as happens to the most of us, he comes to life again, and finds himself at the Court of King Arthur in England in the sixth century, 1,300 years before he was born. That was a time of deep ignorance and superstition; people were but children then. So with his knowledge and his nineteenth century training he soon becomes master of everybody and everything. He controls the Government and runs the whole country—exactly as a college professor would be superior to all the children if he should take it into his head to join a class at a parish school. Now let us see what this idea may mean to you or to me.

In the autumn of 1873 Mr. James Murphy, of 49, Townsend Street, Dublin (present address 5, Synnott Row, Synnott Place, Lower Dorset Street) had a severe attack of rheumatic fever and was under treatment at the Sir Patrick Dunn's Hospital for three months. Then he left the hospital, but not the man he was before the disease fell upon him. Afterwards he was never free from it. For a while he

would be comparatively well, then down on his back again. It would depend on the weather and other circumstances, you see.

Of his worst times he speaks in this way: "My ankles and feet were hot and painful, and would often swell to three or four times their natural size. Occasionally the pain extended to the hips, and I had to be swathed in wadding from the thighs down to the ankles. In this way—now able to get about and now confined to my bed—I suffered for *over seventeen years*. The joints of my fingers and toes became displaced, or seemed to be so."

We don't need to point out what a cripple this sort of thing makes of a man. If he were wounded and torn in battle or by machinery he couldn't be worse off. Yet the number of people thus disabled is immense and, while rheumatism is peculiarly the disease of adults and old persons, the young (even children) do not escape it. If the disease were only understood—but let us not get ahead of our story.

"At Christmas, 1890," continues Mr. Murphy, "I had a dreadful attack, and was *confined to bed for seventeen weeks*."

This took him clear through the rest of the winter and one month of spring up to the first of May. What a dreary, miserable season it must have been! There is no merry Christmas or jolly coming of the buds on the trees for a man in that situation. Still, it might have been prevented if he had known then what he found out later.

"All this time," he goes on, "I was in the greatest agony. I couldn't move myself in bed, and finally got so bad I couldn't lift my hand to my mouth, and had to be fed like a baby. Night after night I got no sleep, and often wished myself dead. As for work, I thought I should never do a stroke again. The doctor who attended me gave me medicines, but I seemed none the better for them. I had long since lost all faith in rubbing oils and embrocations; I had spent pounds for them without benefit."

"One day, whilst still suffering great pain, I came upon a book telling how cases like mine had been cured by Mother Seigel's Curative Syrup. Not knowing what else to do I bought a bottle of Mr. Mannin, the chemist in Brunswick Street. After taking the medicine a day or two I had less pain, and I was able to leave my bed, and *fourteen days later I had not an ache or a pain of any kind, and got back to my work*. Since that time—now two and a half years ago—I have had no return of my old complaint. I never felt better in my life than I do now, and I thank God that I ever heard of Mother Seigel's Syrup. You are at liberty to publish my statement. I have been in the employment of Mr. Robinson, coal merchant, for the past ten years. Yours truly, (Signed) James Murphy, Dublin, June 23rd, 1893."

The mysterious American at King Arthur's Court was powerful because of his knowing what nobody else knew. Had Mr. Murphy known years before that rheumatism is caused by impurity of the blood, and that Mother Seigel's Curative Syrup cures it, he could have defied and banished that agonising ailment. We print these facts in order that his present knowledge may also be everybody's knowledge.

TO STAMP COLLECTORS.

5,00,000 Foreign Stamps, (well-mixed)

Includes some very good varieties. The best offered at the price, which is extremely low.

No. 1a. Containing 100 Stamps, Rs. 1-4 (post free).

" 2b. " 250 " " 2-8 "

" 3c. " 500 " " 5-4 "

" 4d. " 1,000 " " 9-4 "

Terms:—CASH or V. P. POST.

General Price Catalogue, contg. prices and particulars of nearly 1,000 SETS OF STAMPS, embracing almost all the countries in the Universe.

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WM. RUTHERFORD & CO., SIMLA (PUNJAB).

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Published Twice Daily—Morning and Evening.

THE OLDEST, THE CHEAPEST & THE MOST POPULAR OF IN SOUTHERN INDIA.

Its chief features are:

A LONDON LETTER written weekly by a distinguished Member of Parliament.

Letters from Hyderabad, Mysore (and Bangalore), Travancore, Cochin, and Pudukota contributed by Correspondents well versed in the affairs of those States.

Letters from Far and Near } Political sketches and Caricatures of the leading men in Southern India
and
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In Advance:	Yearly Subscription	Rs.	10 0 0	Rs.	6
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Those whose monthly income exceeds Rs. 500 and all Clubs and Associations except Students' Societies will be charged at Higher Rate.

THE "MADRAS STANDARD."

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1.	1 Column.	1/2 Column.	1/3 Column.	1/4 Column.
6 insertions a Week	Rs. 80	Rs. 65	Rs. 45	Rs. 25 per month
3 do do	" 45	" 35	" 25	" 15 do
2 do do	" 35	" 30	" 20	" 12 do
1 do do	" 20	" 16	" 12	" 8 do

2. Special short advertisements for insertion either on first or on the eighth page.

	1/2 Inch.	1 Inch.	2 Inches.
6 insertions a Week	Rs. 10	Rs. 15	Rs. 25 per month
3 do do	" 6	" 9	" 15 do
2 do do	" 4	" 6	" 12 do
1 do do	" 2	" 4	" 7 do

Contracts cannot be entered into for less than a month, no less space than quarter of a column at the above rates discount of 5, 10 and 15 per cent. will be allowed on advertisements ordered and paid in advance for 3, 6, and 12 months respectively.

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1. English Advertisements: 4 as. per line, first 4 insertions, per line, fifth and following insertions.

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III. CIRCULATION OF LEAFLETS:—

1. For each circulation locally and by post Rs. 25.

2. For each do. locally only " 15.

3. For each do. by post only " 15.

(This excludes extra postage where the weight of leaflets necessitates such.)

Advertisement charges are strictly payable in advance, except approved customers.

MARKET SUPPLEMENT.

SATURDAY, AUGUST 21, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (July 30, 1897) says:—consequence of the August Bank Holiday, Public Sales are suspended on Tuesday, 27th inst., to Thursday, 5th prox. The small supplies brought forward met a good demand and a very steady tone prevailed.

Nearly 1,500 bags East India were offered and attracted good competition, values being obtained for medium qualities, whilst fine color sorts realised extreme prices.

The small quantities of Central American sold steadily at rather higher rates.

An easy tone has prevailed in the Terme Market owing to the heavy Brazilian receipts, and quotations show a fall of 1/- to 1/6 since our last.

Messrs. Patry & Pasteur's Report of the Colonial Markets for the Week ending July 28th, 1897, says:—Bank rate 2%. Bombay Exchange closes at 3½d. Brazil Exchange 7½d. Rupee paper 3½%. Silver 26½d. per oz.

Since our last Report this market has been steady, with a fair demand for all kinds, especially for the better qualities, of which the supply continues very moderate. Brazil markets are very steady.

Daily receipts have averaged 12,428 bags in Rio, and 21,714 bags in Santos.

The large receipts of the last few days, combined with contradictions in the report that the frost in Brazil had done damage to the trees, have depressed the market for "Futures," which closes quiet with a decline of 6d to 1s 9d, viz.:—Good average Santos in Havre, September delivery, £45.00, in Hamburg pf. 36½, and No. 7 low ordinary Rio in New York 95.

To-day's London official quotations are:—

	Aug.	Sept.	Dec.	March	May
RIO	34/-	34/6	35/-	—	—
SANTOS	36/3	36/3	37/-	37/6	38/-

We quote:—

Ceylon, mid. to good mid.	98/ @ 106/	Costa Rica, mid. to fine...	83/ @ 109/
Do. small to low mid.	82/ „ 97/	Do. ord. to low middling.	60/ „ 82/
East India, mid. to good	—	Jamaica, good to fine ord.	51/ „ 66/
mid ..	87/ „ 103/	Do. greenish to fine	—
Do. small to low mid.	76/ „ 87/	colory...	74/ „ 120/
Guatemala, mid. to fine...	74/ „ 102/	African	30/ „ 32/
Do. good ord. to low	—	Columbian, ordinary	50/ „ 55/
mid...	60/ „ 73/	Do. good ord. to	—
Salvador, good ord. foxy	—	low mid...	56/ „ 76/
greenish...	56/ „ 57/	Do. mid. to fine...	77/ „ 98/

Receipts in Brazil compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
RIO	294,000	293,000	156,000
SANTOS	487,000	403,000	233,000
	781,000	696,000	389,000

Auctions:—

45 casks and tierces 22 barrels and bags Plantation Ceylon	... @ 74/ @ 112/
37 cases 1,491 bags	644 bags Coorg „ „ 66/6 „ 110/6
East India	37 cases 735 bags Neil-gherry „ „ 70/6 „ 105/6
	112 bags Shevaroy „ „ 73/ „ 102/
176 barrels 5 bags Jamaica	... „ 50/ „ 110/6
171 bags Costa Rica, chiefly sold	... „ 47/ „ 77/
229 bags Guatemala, chiefly sold	... „ 47/ „ 80/

1,499 bags Salvador, good part sold	... @ 55/ @ 73/
56 bags Honduras	... „ 73/ „ —
711 bags Nicaragua	... „ 47/6 „ 55/6
234 bags Vera Paz and Coban, chiefly sold	... „ 65/ „ 100/
92 bags Mexican part sold	... „ 73/ „ —
3,562 bags Columbian, chiefly sold	... „ 51/6 „ 93/
31 bags Peruvian	... „ 43/ „ 68/
122 bags Venezuelan bought in.	—
135 bags Nyasaland	... „ 58/ „ 94/6
93 bags Liberian Borneo bought in.	—
3 bags Liberian Ceylon bought in.	—
155 half-bales Mocha bought in.	—

Landed last week ...416 tons. Deliveries ...656 tons. Stock ...13,793 tons.
Do last year ...180 „ „ „ 629 „ „ „ 11,043 „

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated July 30th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	86,344 packages.	238,857 packages.	8,351 packages.
1896-1897...	69,409 „	227,500 „	9,859 „
13,968 pkgs. INDIAN	Total 51,531 packages were offered in public auction this week.		
35,884 „ CEYLON			
1,679 „ JAVA			

New markets for British grown Tea continue to expand, and the quantities of both Indian and Ceylon, taken during the first six months of this year, show considerable increases over those of the corresponding period last year. The recent low prices have therefore probably had some beneficial effect in promoting the growth of this very important branch of the trade.

Indian. The new season's Teas are now beginning to arrive somewhat more freely, and as they contain a considerable quantity of good liquoring Teas the market has assumed a more healthy tone and buyers are beginning to purchase more freely, the competition in the sales being decidedly more general than of late. Many arrivals from Assam have been of very fair quality. All Teas with good liquor attracted considerable attention and sold at dearer rates; common kinds, however, have not materially changed in value.

Week's av. of Tea sold on Garden Account, 1897, 9,740 pks.,
av. 8½d. 1896, 4,944 pks., av. 9½d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	...2,682 p	10 $\frac{3}{4}$ 1,397 p	11 $\frac{1}{2}$ 13,389 p	10 11,833 p
Cachar and Sylhet.	3,768 p	6 $\frac{1}{4}$ 1,655 p	7 $\frac{1}{4}$ 12,193 p	6 $\frac{1}{4}$ 11,510 p
Chota Nagpore	...	—	—	3 $\frac{1}{2}$ 105
Darjeeling	... 876 p	9 $\frac{1}{2}$ 886 p	11 $\frac{1}{4}$ 2,111 p	9 $\frac{1}{4}$ 5,591 p
Dooars	...1,926 p	7 $\frac{1}{2}$ 461 p	8 5,653 p	7 $\frac{3}{4}$ 3,182 p
Kangra, &c.	... 64 p	6 $\frac{1}{2}$ 212 p	6 $\frac{3}{4}$ 500 p	6 $\frac{1}{2}$ 858 p
Nilgerry	... 31 $\frac{1}{2}$ c	4 $\frac{1}{4}$ —	— 788 p	6 $\frac{1}{2}$ 503 p
Terai	...	—	— 106	8 $\frac{1}{2}$ 65
Travancore	... 393	7 333 p	6 $\frac{3}{4}$ 6,822 p	6 $\frac{1}{4}$ 4,867 p

Total sold on Garden Account 1st June to date 1897, 48,250 pks., av. 8½d. 1896, 38,514 pks., av. 8½d.

SUPPLEMENT TO "PLANTING OPINION."

Comparative prices of Indian Tea in London:—

		1897.	1896.	1895.	1894
DUST.	(Fair ordinary, dark liquor) ...	3½d	4½d	4½d	4d
FANNINGS.	(Red to brown, strong rough liquor) ...	4d	5d	4½d	4½d
BROKEN TEA.	(Brownish to blackish, strong liquor) ...	6½d	7½d	6½d	6½d
PEK. SOUG.	(Blackish greyish, useful liquor).	6½d	8d	7½d	7½d
PEKOE.	(Greyish to blackish, some tip, useful liquor) ...	8½d	9d	8½d	10d
PEK. SOUG.	(Blackish greyish, inferior liquor).	5d	5½d	5½d	5½d
PEKOE.	(Blackish greyish, some tip, inferior liquor) ...	5½d	6½d	6½d	6½d

Ceylon. The auction was a very heavy one and comprised 35,884 packages, against 22,217 last week; bidding, however, was very animated owing mainly to slight improvement in the general quality of offerings, many Teas showing decidedly better flavour than of late. Good Teas were in strong demand at better prices, while the demand for the commoner

grades remains practically unchanged. Average for week rather 7½d., against 8d. last year.

Ceylon Tea sold on Garden Account 1st January to date 660,469 pkgs., av. 7½d. 1896, 608,225 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:

		1897.	1896.	1895.
PEKOE SOUG.	(Ordinary leaf; fair liquor) ...	6d	6½d	6½d
PEKOE	(Ordinary leaf, little twist; fair liquor) ...	7d	7½d	8½d
PEKOE SOUG.	(Rather bold leaf; indifferent liquor) ...	4½d	5½d	6d
PEKOE	(Somewhat bold leaf; indifferent liquor) ...	5½d	6d	6½d

Javas. A varied selection was brought forward, the best Teas from "Goalpara" and "Perbawatte," an invoice from the former re 9½d. per lb., and from the latter 10d. per lb. The sale passed with competition, the Teas being mostly sold in the room at firm to better prices.

Bank rate 2 per cent. Exchange on London three months sight.—Calcutta 1/3½; Colombo 1/3½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8½d.) July 30th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, and Vari	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry ...	31½ c	4½	—	—	31½ c	† 4½	—	—	—	—	—	—	—	—
Thia Shola ...	393	7	—	—	25	5½	20	6½	—	—	—	—	2	—
Travancore ...	47	6	—	—	—	—	20	† 7½	—	—	—	—	—	—
Bison Valley ...	20	7½	—	—	20	—	—	—	—	—	—	—	—	—
Isfield T Co Isfield.	89	7	57	6½ 9	20	6	—	—	7	5½	—	—	5	—
Penshurst ...	10	5½	—	—	—	—	—	—	—	—	10	5½	—	—
TB ...	116	7½	—	—	—	—	99	7½ 8½	—	—	—	—	17	—
Travancor T Est BA.	111	6½	48	6½	25	6½	27	7½	3	5½	—	—	8	—
Vembenard ...														

Teas marked thus † are New Season.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

[L. II.]

COONOR, SATURDAY, AUGUST 28, 1897.

[No. 22.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage.

ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c. Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 3rd September 1897.

Nilgiris. SHOLUR, 26th August.—Rainfall for month, 13.11, making a total of 40.26 to date. There was a slight break, lasting four days, but on the 23rd it started again in the old persistent fashion, which is simply ruinous to tea flushes. If we had a few days real good sun, flushes would, I believe, be extraordinary. Grains getting dearer in spite of the rain. *Health.*—Good. *Labour.*—Plentiful.

Coorg. POLLI BETTA, 24th August.—*Weather.*—During the past week and up to to-day the weather has been light. The rain has come mostly in the evenings. There have been several rainless days. This is just as it should be after the severe drenching of the previous week. *Plant-diseases.*—Leaf-disease has made a start, but coffee is on the whole still looking very fine. Prices of grain are still ruling high. *Labour.*—Coming in slowly. With few exceptions there is perhaps sufficient for present requirements, but more will be required later on. Contractors are employed. *General Health.*—Fair. Coughs and some fever prevalent.

Kadur. MUDIGERE, 24th August.—*Weather.*—For the past week has been fine and sunny, good growing weather after the heavy burst last week, when many estates registered 6 inches a day! Showers came up from the N. E., and the S. W. is clear as a rule now. *Plant-diseases.*—Leaf-disease showing up on some estates, which is most disheartening, for coffee has been looking well and good wood on. *General Health.*—A good many cases of fever still, and cholera has broken out in Chickmaglur, there being ten deaths last week. *Labour.*—Plentiful, but locals are still employed in their own fields. *Interesting Items.*—The Volunteer Camp of Exercise comes off on the 6th—13th at Chickmaglur, and a Fancy Dress dance is looked forward to. Snipe are in; the first bird was shot on the 23rd August, two days later than the 1st last season.

Nellampatty. 25th August.—*Weather.*—Rain for week, 2.10; to date, 136.97. We have had a very bright break for about a week, but luckily for clearings it seems over or just about over. Yesterday we had 1.93 and a little

more this morning. *Plant-diseases*.—On some places leaf-disease seems to have abated a bit, but there is a great deal of it still visible everywhere. *General Health*.—Fair. *Interesting Items*.—Just indignation prevaieth! It is very hard that such a hitherto steady and respectable community should be suspected of harbouring such a daring romancer as the correspondent to the *Madras Mail*, who signs himself "Planter, Nellampatty Hills," under the Elephant-Bicycle story. In our own small way we could, at a stretch, tell a "tara diddle" or two, but now we seem to have unearthed a first-class "Biblical character" all to ourselves. Plucky people he and his wife must be to cycle the Palghat road. We presume they also cycled down the ghat—to keep up with the rest of the story.

OURSELVES.

Our change from "a fortnightly" into "a weekly" has not passed without criticism. We have been congratulated on the change, we have also been blamed for making it; but those who have taken exception to our action would seem to have done so under a misapprehension of the facts. The change made is assuredly for the benefit of the reader. If he is a busy man, as nearly every one of our readers no doubt is, he gets his planting "literature" served up in two weekly lots instead of one fortnightly lot. Should he not have leisure to read one week's issue when it arrives, he can await the next, and then be in no worse position than if there were one of the former forty-page issues to be got through. One fear expressed is that we shall be unable to find pabulum enough to fill our columns every week. This to some extent counteracts another opinion expressed, *viz.*, that a weekly is more than busy men can get through. As a matter of fact, we rely on planters to help us, not merely to fill the columns, but to make the contents interesting, instructive and useful. Instead of censure, we would invite honest criticism. Whenever we fail to please it is from no lack of good intentions. If planters will say what they want, or what they do not want, we will endeavour to meet their wishes, while steering clear of the danger to which good old Æsop called attention long ago, that the efforts to please *every one* may easily lead men into pleasing *no one*. Some planters want a strictly *planting* organ, others like a little variety. Some consider the planter's wife as well as the bread-winner himself; others would confine the paper within narrower limits. All, perhaps, are agreed that such an organ as *Planting Opinion* endeavours to be should throw its columns open for the discussion of planting affairs *by planters*. This is what the management chiefly aim at: they ask planters to avail themselves of the opportunity, and, by discussing affairs of general interest in correspondence or by means of special articles, to help to make the paper useful to the whole community. Proof of what planters *can* do in this way is to be found in Ceylon; and there is an immense amount of talent in Southern India that might easily render yeoman's service to a good cause, were it not persistently hidden under a bushel, as it now too often is.

GENERAL NOTES AND ARTICLES.

The Sea Railway to Ceylon. During a recent visit to Colombo, Mr. Knight, the well-known Travancore planter and formerly of Ceylon, vehemently urged that Ceylon should in its own interests strongly discountenance

the scheme of the proposed railway from India to Ceylon. He states with great force that the very inaccessibility of Ceylon renders desertion of coolies from plantations almost impossible, whereas in South India, the ease with which coolies can regain their villages does much to prevent this crime. As to the expense of coolie labour in Ceylon being lessened by the railway, Mr. Knight points out that though the cost of wages is 25 per cent. more than in India, yet by means of the better discipline quite 50 per cent. more work is obtained from them.

Rain-gauges. With reference to the unfortunate error in measuring rainfall last week by our Nellampathy correspondent, any such mistakes could be easily avoided by reference to the following table, kindly prepared for a correspondent by Michie Smith, Government Observatory:—

Diameter of funnel in inches.	oz. of water for 1 inch of rain.	cents of rain for 1 inch of water.
12	65.26	1.532
10	45.32	2.206
8	29.01	3.448
6	16.32	6.129
5	11.33	8.826
4.7	10.00	10.000

For any size (d) of funnel, to find the equivalent ounces of water for 1 inch of rain, multiply the square of the diameter by 0.4532.

Castilleja rubber and Croton tiglium. In the last report of the N. Agri-Horticultural Society appeared an interesting letter from Mr. L. W. Grey, of Ponnani, Nilgiris, which is worth quoting:—

You asked me for particulars of my Castilleja Rubber. Six trees planted in 1889 at an elevation of 3,000 feet, flat land, North of Ponnani, rainfall 40 inches, supplemented with irrigation in hot weather, March, April. They flowered for the first time last May, and seed ripened in June. I got 350 seeds, but some were lost. The seeds are now germinating in the nurseries. The growth of the trees is as follows:—

1.	40 feet high	28 inch girth	3 feet from ground.
2.	37 "	27 "	" " " "
3.	24 "	30 "	" " " "
4.	24 "	30 "	" " " "
5.	20 "	20 "	" " " "
6.	19 "	20 "	" " " "

I think the above may be considered good growth. No particular care has been taken of them. They are full of sap, but how to tap them is what puzzles me. No doubt we shall hit upon a plan ere long.

My croton Tigilium. Some 12 trees have seeded freely this year, and this seed is now quoted at 85/ per cwt. in the London market, but being a drug, the market is easily brought down. The Castilleja Rubber does not seem to hurt coffee as the trees growing under it are first rate."

Uses of Grevillea robusta. The uses of the Grevillea robusta, says a correspondent of the Ceylon paper. It furnishes excellent timber—which is much worked. A large withering house on, perhaps, the best estate in Dimbula, has been built of this wood. The timber looks sound and dark in colour, although, no doubt timber—*as the trees could not have been over 27 or 30 years old*—

Grevillea is valuable in the field, as its light shade, planted at say 30' to 36' apart is rather beneficial to tea otherwise. But the great good it does, is the bringing of plant food from the subsoil, and distributing the same in the form of fallen leaves,—(has an analysis of shed Grevillea leaves been yet made?)—which, too, are useful in preventing surface "wash"—while decomposing on the ground.

The tree thrives best in light, porous, stony or sandy soil least so in clayey soil. It is easily raised from seed, and after being planted out—if badly shaken by the rude monsoon winds—it should be cut down to within a few inches of the ground—when it will grow afresh. We can't get everything, you know; and don't deserve to! It would be too good if *Grevillea* furnished a good fuel! Well, it does not. It dries up very much after felling, and although when seasoned burns very well in furnaces, the heating power is probably half that of old dry *Doon*: but I can't give figures.

To these uses may be added that of affording excellent light shade for coffee, and also, the possible source of supply of a most valuable gum.

The sleep of plants.

Like animals all plants require intervals of repose during which the vital functions are slowed down, and the organic structures undergo repair. Some plants repose during the rainy season, others during periods of drought, but while some plants sleep during the cold or the comparatively cold season of the year, others again take their rest when the average temperature is high. It occurred to a Norwegian observer to investigate the sleep of plants, more particularly with the object of shortening the period of repose, and this he aims to have attained by subjecting the bulbs or buds to the action of chloroform vapour. He asserts, indeed, that plants thus treated subsequently develop more rapidly than those whose repose has not been intensified by the narcotic action of this drug, and the observation is not without considerable interest. If his observations are trustworthy, it follows that sleep in plants is not strictly comparable to that of animal life, for we do not suppose that the period allotted to sleep by animals could advantageously be shortened by the administration of an anæsthetic. Sleep, on the other hand, is a relative rather than an absolute condition. Its value as a restorative depends in a very marked degree on its intensity, and certain individuals derive more benefit and recuperate their jaded energies more effectually in five or six hours than others do after twice as long. This recuperative energy is asserted to be an indication of a high standard of vitality, and common observation certainly lends colour to the view that diminished recuperative power is indicative of physiological deterioration.

Plantains.

We have written many times of the great possibilities of plantain planting in South India, but so far without attracting any serious attention. Yet the export of the banana and the plantain forms, as our contemporary the *Madras Times* points out, an important and profitable branch of the commerce of Nicaragua, Mosquito, and British Honduras, enormous quantities of the luscious fruit being shipped to the United States and Europe, England being about the largest European consumer. Not only in South America but everywhere where the banana is grown, the cultivation and harvesting of the fruit is easy and inexpensive, requiring no more than a little care and close supervision during the planting of the suckers, the tending of the growth, and the gathering and packing of the fruit for exportation. The profits are found to be large and secure, the gain being declared to be as much as 150 per cent. on the outlay in the first 12 months, and springing to

the astonishing sum of over 900 per cent. in the second year, all this being clear profit for the planter. For results such as these—even if we allow a goodly discount for roseate estimates—it would be worth while working hard and running big risks, but here is an industry in which neither hard work nor great capital is required in order to yield a magnificent return. The Nicaraguan banana planter neither toils excessively at his business nor risks much capital. He works gently and without excitement for a period something under a month in the year, and is at liberty during the remaining eleven months and odd days to work or not, as best beseemeth him. India's facilities for disposing of her fruit with advantage are nearly as great as those of any of the South American States, and certainly as great as those of Australia, while cultivation, if it were carried out on the most improved methods, would be easier and considerably more certain than in the Island Continent. Yet things are by no means on India's side. Australia has begun growing the mango for the European markets, and the natives of the Central American States furnish Europe and America with the banana. Both fruits are natives of India. The mango, of course, belongs pretty well to India alone. As for the banana, there is a coarse species indigenous to Africa, but America's banana is of the more delicate Asiatic species, which was taken over to the banana-less new world by Spanish settlers. In India, however, the planter has done but little, commercially, with his trees.

U. P. A. S. I. LEAVES.

[GATHERED BY THE SECRETARY, U. P. A. S. I.]

ALTHOUGH the statistics already in hand are fuller than any yet published, several districts have still furnished none. It is very desirable that gaps of this kind should be filled at once. The Book of Proceedings for 1897 will be issued very soon, and as it is not proposed to publish statistics again next year, it would be well that this year's figures should be as near complete as possible.

Orders for the book should be registered as soon as possible, either with the Secretary of the U. P. A. S. I., or with Messrs. Addison & Co., the printers.

Copies of the *Graphic*, containing an illustration of the U.P.A. Casket, are available. Application should be made to the Secretary.

CULTIVATION OF COCA ("ERYTHROXYLON" COCA).

A PLANTER writes to ask the *Ceylon Observer*:—"What was the reason that the cultivation of *Coca Erythroxylon* (for cocaine) was not seriously taken up? I see by an old volume of the *T. A.* that an experimental lot of leaves sent home in 1885 was valued at 13s. per lb. The plant is said to be almost naturalized about Peradeniya." Our correspondent will find a full history of our Ceylon experiments so far as they have gone in our "Planting Review" in "Handbook and Directory," pages 132-133. The one or two Ceylon planters who have gone in for coca have no doubt done very well; for the export of "coca leaves" has increased from 956 lb. in 1890 to 3,392 and 3,397 lb. in 1895 and 1896 respectively. The fear of overdoing the market (after the experience of cinchona) had no doubt kept planters generally in suitable districts—from Dumbura to lower Pussellawa (?) or so—from going in for coca. We see that cultivation is extending in Peru: in fact we may as well quote what is said in

the very latest Journal of the "Society of Arts" (July 30th) on the subject:—

THE PRODUCTION OF COCA IN PERU.

Before the discovery of cocaine and its anæsthetic properties, the consumption of coca was limited to the demands of those provinces in Peru in which the mining industry was carried on, the miners refusing to work unless they were supplied with coca. Twenty years ago, according to the *Economista* of Lima, the cultivation was only engaged in districts which enjoyed the most favourable conditions of climate and labour. In the province of Otuzco, the systematic cultivation of coca was only carried on in the haciendas of Choquisongo and Sanjumas, and the production amply sufficed for the needs of local consumption and the mining industries of Salpo and Saypullo. For some time past the production of coca has greatly developed, and the province of Otuzco is at the present time the most important producing district in the north of Peru, its production exceeding even that of the provinces of Huamachuco and Cajabamba, not only as regards quantity but also quality. The number of plants is 270,000, and the majority of the plants in this province have not yet attained their full development. The coca from these districts is brought by two houses of Trujillo for the cocaine factories of Lima, and as they enjoy a sort of monopoly, the prices vary at will. The proprietors of the haciendas of Huayobamba and Cayhanchal are proposing to establish cocaine factories in close proximity to their plantations, which may have the effect of lowering the prices. With the exception of the hacienda of Chuquilhanqui situated on the river of that name, all the other coca plantations are found along the river Chicama. To obtain the best result, coca should be cultivated in places where the temperature rarely falls below 240 Centigrade (750 Fahr.) and frequently rises as high as 30 (86 Fahr.) As regards the altitude of the plantations those of Calancas and Huayobamba are for the most part situated at an elevation of 3,000 to 4,000 feet above the level of the sea; a few are found as high as 5,000 feet, but the product in these cases is of an inferior quality. The haciendas of Chuquilhanqui, and a few others of minor importance, are situated at an altitude of about 2,000 feet. The quality of the coca varies according to the soil. That obtained from dry ground is better than the product of a moist soil. It is for this reason that the Chuquilhanqui coca, although frequently attaining a height of about 9 feet, is far from possessing the strength and aroma of that produced in Calancas and Huayobamba. In the districts of Pampas and Calancas, there are about 80 small proprietors of coca plantations; at Compín the number exceeds 100, while at Chuquilhanqui there are hardly 20, the cultivation of coca having only within the last few years been introduced in the latter district.

The latest quotation for coca leaves in London is only 7d. to 8d. per lb.

LETTERS TO THE EDITOR.

NOTICE TO CORRESPONDENTS.

[R. E. G. "MYSORE TRIP": Letter received, with thanks, but is too short to publish as it stands, so we await continuation. VAN RESD. Declined, with thanks. A PLANTER'S FRIEND. Why not write direct to the paper in fault; we do not consider it expedient to give wider publicity to that journal's misstatements and personalities.]

A TALE OF A SHOOT.

SIR,—Your copy of 31st July is to hand, and I glean therefrom, under "Nellampathy British, Interesting Items," "that the Cochin Rajah is going up to shoot in the tail end of the year." This should prove an "interesting item," and, presumably, the presence of all the planters there has been requested to see the "end" of the poor "tail"? We poor Nilgiri Planters feel quite out of it. Is this sport peculiar to the Nellampathy District? Supposing though the "tail" becomes lively—whisks about—and won't be shot, what does the Rajah do? Cut it short? N. S. R., take the hint.

BARBER.

7th August 1897.

["BARBER" must hail from North of the Tweed. What more truly interesting item could one expect from the remote region referred to than

that the head of the State intended to shoot in (fortunately not at) the end of the year? ED.]

SNAKES!

SIR,—Bill Blunderbose, the Boniface of a Bush-run in back-blocks, has had some thrilling experiences with snakes. He is more versed in their natural history and pleasing manner than most people I have met. He was out one day in the sun. It was piping hot and Bill was on foot, for no horse could climb the mountain of flesh which he called his body. He sat down on what he thought was a log and concluded that he would smoke. Taking out his pipe and finding some ashes in a bowl he knocked it smartly against his log. Suddenly the bowl slipped away from under him and sent him sprawling. Getting up in great indignation he saw the log glide away, and to his horror he found he had been sitting on a snake. "Snakes are big in those days," he remarked. "Never see any so big now-a-days, but they are like everything—they be going down. No," he said angrily, answering the incredulous looks of his listeners, "I had not taken any whisky that day nor seen any one taking it, but I like to see you take something to put into your mouth and not keep them wide open a-catching flies. Which is all the folks is good for."

The hint was taken, some one duly shouting, and the man, appeased by finding that some cash had come in in consequence of his story, started to tell another.

Yes, snakes is queer customers; they don't always act as you would expect. I was out one day and sat down on a log. No, there was a log and not another snake, mister; so mind your business and I puts my gun against a tree hard by. I sat a-thinking. What about? Never mind, it was not about you; when out on a snake from under the log right between my legs. I got up—snake he was a bit abroad too and went straight for me and up he goes and goes right down into the barrel with the end of his tail a-sticking out at the end. Well now, there is a deal in presence of mind. What does I do? Why I take my gun and pulls the trigger, and I never saw that snake again.

It seems strained, but it amused his

HEA

THE COFFEE CAMPAIGN.

SIR,—It is of course natural that the coffee planters of Southern India should wish to see the use of the fragrant beverage extended, as it means larger consumption and better prices. But what seems to me the chief obstacle in the way is the high price at which the article already stands, and I fear this high price which accounts to a considerable extent for the "chicory and coffee" mixture which one of your correspondents, "Cup of Coffee," sometime ago deplored as having taken its place at home of the "delicious, exhilarating and refreshing beverage" he is accustomed to on the tôte.

The campaign in connection with tea is on a somewhat different footing from that of coffee. The Indian and Ceylon tea planters have so increased the production that tea is sold at low prices compared with former years. They therefore offer the public an article not only superior from their improved methods of cultivation and preparation, but cheaper than before, and these prices are such as to bring it within range of the poorer classes. The "Tea Campaigner" therefore must have mill after mill to reach the public within his reach, while the "Coffee Campaigner" can only with his high prices come within hail of the thousands.

I think it will be found that coffee has stood at a high price for a good many years. The time was in the days of the high yields in Ceylon and Jowa, and when Brazil was also producing largely, prices were 30 to 40 per cent. below what they are at present, and that too with exchange about or above two shillings to the rupee! Taking East Indian now at an average, 90 shillings per cwt. in the London market, add to this

a pound, equal 28 shillings per cwt. You have a wholesale price to begin with of a little over a shilling a pound. Before it reaches the table of the consumer, what with carriage, charges and profits to the various dealers through whose hands it passes, the price cannot be less than 1/6d. to 1/10d. per lb. The same quantity of tea at the price will go farther, will make more cups of an agreeable beverage with much less trouble, so that it has every way (apart from the matter of individual taste) the advantage for the million, and it is the million you want to reach. No, what is wanted is an increased yield per acre, and this is the direction in which the planter must continue to apply himself with unremitting energy. Let the Indian Planter make the most of the good prices now obtainable. Let him by all means push the sale of his produce into new fields. But do not let him be too sanguine of the result, for until he can offer the public his fine coffees at rates which will bring them more within easy reach of the multitude, the ground gained will not, in the long run, meet his expectations. His present position is a fairly good one. He is getting high prices and a very favourable rate of exchange, while he still pays moderate rates for his labour. He cannot make money under present circumstances and with the increased knowledge he has gained in the cultivation of the article, he may not have another chance for a long time to come. Where the area of suitable land is limited, but when the vast virgin forests of tropical Africa are laid under contribution and cultivation is extended into the immense reserves of South America, we must look for a large addition to the world's annual supply and with a larger supply lower prices.

"A HARD NUT."

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma loppings, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the MANAGER, ARIENKOW ESTATE.

COFFEE.

Early leaf disease.

A South Travancore correspondent remarks that (in common with some other South Indian districts) this year's attack of leaf disease happened two months earlier than last year. As the sooner it is over, the sooner the coffee picks up, and hopes for good crops next year.

An irrigated garden.

A Correspondent writes from Bangalore:—On Sunday, the 15th instant, a party of gentlemen, including Col. Donald Robertson, British Resident in Mysore, Col. J. P. Grant and Messrs. E. R. Kindersley, A. Lambert, H. H. Sparkes, Campbell-Walker, H. Raikes, Glengall Madden, and Godfrey were invited over to a picnic party by Mr. Justice Meenacshaiya, of the Mysore Chief Court, at his coffee gardens near Tumkur. The Southern Mahratta train was taken from the City Station in the morning, Mr. Lindsay, the District Traffic Manager, accompanying the party, as Mr. Meenacshaiya had chartered a "Special" for the return journey, and Herehalla reached, where the party breakfasted at the station and proceeded thence to the

Estate, (in dogcarts and tongas) about 4 miles distant, arriving there about noon. Most of the gentlemen being planters, were of course interested as to what could be done with coffee at an elevation similar to Bangalore almost, and only about 40 miles distant from here, and it was an agreeable surprise to them to see such a luxuriant growth of coffee. Of some 30 acres planted from 5 to 6,000 trees will be two years' old in October next, but they look more like four-year trees we usually see in the coffee growing districts of Southern India and having a deal more primaries than ordinary coffee; and, considering their age, the proprietor is quite hopeful of a ton crop; next year, with the full 30 acres in bearing he expects from 6 to 7 tons, and the trees look healthy enough for that. The whole garden is perfectly free from such pests as borer, bug and leaf disease, the planter's enemies. To account for such a state of affairs there is something in the back ground, viz., natural irrigation. The estate is situated on the slope of a hill from the top of which runs a stream, the Talapoori, which gives a never-failing supply of water from the hills and the constant flow is impounded in artificial reservoirs, with sluices for regulating the irrigation, which is mostly by gravitation, that is to say, there is no necessity for baling or carrying the water to the plants. There is also a second stream a little lower down, which commands the irrigation of another 15 acres, and terminating in a waterfall, where at present there is a bathing house, and which the owner will eventually utilise for pulping his crops. There are 20 acres in course of planting out this season, and the entire estate is protected by a barbed wire fence.

Mr. Meenacshaiya, some of your readers must know, had a very highly cultivated garden on the Oosoor Road, a few miles out of Bangalore, which he disposed of not long ago. He is a very successful coffee grower, and I am sure that anybody intending to embark in the industry will not regret a visit to his plantation near Tumkur.

As to the picnickers, they returned in the evening by Special train, having refreshed themselves at the station, and expressing themselves highly pleased with their outing.

SOUTH INDIAN COFFEE AND PEPPER.

In his interesting Annual Statement of Exports of Coffee and Pepper for the year ending 30th June 1897, the total figures of which approximately represent the crops of these products in India for the year in question, Mr. Ralph Tatham, of Tellicherry, shows the distribution of shipments to foreign ports and gives the figures relating to exports for the two previous years for the purpose of comparison.

Coffee. The crop of 1896-97 was remarkable as being the smallest exported from India for many years, the total quantity not exceeding Cwts. 211,760, or some thirty-one per cent less than the previous crop, which itself was not a good one. Of the quantity shipped this past year Cwts. 117,182 may be regarded as Plantation, and the balance Cwts. 94,578 as Native Coffee, the value of the former being Rs. 79,68,376 and of the latter Rs. 55,80,102, calculated at Rs. 68 and Rs. 59 per cwt. respectively, which I consider an average value for the year, allowing for the difference in prices obtained for the produce of the several districts in which the crops were grown. The total value of past year's crop may therefore be taken at Rs. 1,35,48,478 as against that of last year, which I estimated at Rs. 2,24,61,857, but as already shown last year's crop compared unfavourably in quantity with that of the previous year and in addition the Coffee Market was weaker to the extent of an average of some nine Rupees per cwt. The considerable reduction in the export from the ports of Mangalore, Tellicherry, Calicut and Madras point to the fact that the crops in the districts of Mysore, Coorg and the Nelliamp

pathies, which find their outlet at the ports in question, were exceptionally short; whereas judging from the shipments from Beypore the crops from the Neilgherries and Shevaroy's were greater than those of the previous year.

Pepper. The total exports of this spice amounted to Cwts. 222,383, or some forty-one per cent in excess of what was shipped last year, the value of which at an average of Rs.17-8 per cwt. amounts to Rs.38,91,702. The shipments from Tellicherry were the largest.

Mr. Tatham's statistics show that London is still the recipient of most of the coffee, but that, outside India, Havre takes the greater part of the pepper. Exports to the chief ports in 1896-97 were as follows:—

	Coffee.	Pepper.
	cwt.	cwt.
London	103,655	20,003
Marseilles	12,980	
Havre	54,457	79,125
Trieste	5,839	1,000
Hamburg	3,691	13,606
Turkish, African, Arabian and Persian Gulf ports ...	10,988	1,883
Bombay and other Indian ports ...	29,583	146,338

As regards the extent to which the various Coast ports contributed towards the total exports, we are able to gather the following information from the elaborate statistics under review:—

	Coffee.			Pepper.		
	1894-95	1895-96	1896-97	1894-95	1895-96	1896-97
	cwt.	cwt.	cwt.	cwt.	cwt.	cwt.
Mangalore ...	112,349	128,375	83,350	1,600	2,671	2,287
Cannanore ...	2		3	28,806	26,366	52,178
Tellicherry ...	34,496	57,080	37,944	46,178	52,623	69,518
Badagara ...				5,867	7,919	20,623
Calicut ...	54,905	49,258	36,494	6,527	18,696	19,026
Beypore ...	29,604	22,828	27,549	2	5	20
Cochin ...	895	914	974	12,071	12,970	22,715
Alleppey ...	822	195	62	49,741	35,750	35,580
Quilon ...	886	930	45	325	580	104
Colachel ...					62	
Tuticorin ...	13,773	10,094	6,456	281	207	285
Madras ...	43,889	37,743	18,883	31	62	47
Totals ..	291,621	307,417	211,760	151,439	157,911	222,383

NYASSALAND.

DESPITE every drawback, the coffee industry of British Central Africa is yearly increasing in importance. Those who have recently been reading Sir Harry Johnston's book, says a writer in the *Madras Times*, will look with special interest to the report of Consul and Acting Commissioner Sharpe, which brings the history of British Central Africa up to date. Coffee cultivation is, we are glad to see, steadily increasing. The value of the coffee exported has increased from £9,290 to £16,426 in the past year, and a considerable amount of new land has been opened out and planted with coffee, which will begin to bear fruit some two or three years hence. The Commissioner estimates that the production of coffee will now be a constantly increasing quantity. Civilisation progresses by road-making and the spread of currency. There is now, for the first time in history, a good broad road joining Lakes Nyassa and Tanganyika—a road which, the Collector reports, is good for "horses or bicycles." A Central African bicycling tour is therefore becoming a matter of practical politics. As for currency, there are now British sixpences and shillings, coined at the Royal Mint, in circulation among the natives of Central Africa, and (so the Commissioner reports) with the most beneficial results. Sir Harry Johnston drove out the rupee, which had endeavoured to get a foothold, by fixing its local value at 18½ to the pound sterling, and now the Queen's shilling takes its place. The natives thoroughly appreciate its uses.

Even in the North Nyassa district labourers prefer to be paid in coin. The Yaos thoroughly appreciate having a currency. It has proved, in fact, a great step towards civilising the native of this part of Africa. He is now able to accumulate his earnings, which formerly, in the days of a calico currency, was an impossibility. He can, moreover, hide his wealth. Many native workers in the Blantyre district have stores of money hidden away, or in the bank. I have

received a number of applications from well-to-do natives for purchase of blocks of Government land of about 100 acres each. A considerable number of natives have bought land, paid for it, and received formal transfers. Most of these are, of course, the more than usually intelligent natives, who have realised the profits made from coffee planting.

COFFEE CULTIVATION WITHOUT MANURE.

A CRITICISM.

IN his reply to my criticism of his lucubrations on the subject in which I charge him with saying that manuring with E. L. cuttings and leaves was equivalent to an application of nitrates ready made, Mr. Nelson says that he may have said that it practically amounted to an application of nitrates as the cuttings decayed away so rapidly. What he actually said was this. I quote from his article in *P. O.* of March 6th, 1896:

"The leaves and cuttings decay at once and the nitrogen which they contain is made available to the coffee tree. I believe, for immediate solubility and availability, they be fairly considered as nitrogen in the most expensive form, nitrates. . . . Thus E. L. is a tree that can be made to produce coffee with two manurings yearly with nitrates. . . ."

As there is not a word in the article referred to as to the cuttings having to undergo the process of nitrification before they could become available to the coffee, I naturally concluded that the idea was that there was no such necessity. To my objection that the well-known dangers of an excess of humus would be liable to arise from constantly applying E. L. cuttings, he replied that this is impossible and says that, on the contrary, it is difficult to preserve what humus there is on coffee land, and is very little risk of increasing it to an undesirable extent. I find it impossible to agree with Mr. Nelson here will appear presently. As to the difficulty of preserving humus on the soil, he refers to articles by "Humus" in *P. O.* I prefer to go on the more authoritative data furnished by Dr. Voelcker in his report on the Improvement of Indian Agriculture." He says on page 270 of the Report:—"In Appendix B, I give some detailed analyses of Munjerabad coffee soils, and I would, in passing, comment on their richness in vegetable matter and in nitrogen resulting therefrom." When it is stated that these analyses were made of soils taken from different parts of Mr. I. Elliot's "Bartchenhulla" Estate, which I understand was commenced in 1856, it will be seen that the alleged difficulty of preserving humus is not proved. The estate is shaded with ordinary recognised good kinds of shade trees, and, it may be supposed, was worked in the most approved style.

Now for the analyses.

SOILS DRIED AT 212°F.	No. 1.	No. 2.	No. 3.
* Organic matter and combined water ...	7.15	13.73	
Protoxide of Iron ...	trace.	1.54	
Peroxide of Iron ...	5.04	11.83	
Alumina ...	20.39	11.53	
Lime ...	.20	.82	
Magnesia ...	.28	.32	
Potash ...	.25	.10	
Soda ...	.12	.12	
Phosphoric Acid ...	.13	.15	
Sulphuric Acid ...	.03	.02	
Nitric Acid ...			
Chlorine ...	.01		
Insoluble Silicates and Sand ...	66.40	60.34	
	100.00	100.00	100.00
* Containing Nitrogen ...	.032	.20	
Equal to Ammonia ...	.039	.24	

In his remarks at the foot of these analyses, Dr. Voelcker mentions that No. 1 is considered good coffee soil, and that coffee does not do well in Nos. 2 and 3. And from this he naturally infers that "*the supply of nitrogen is of lesser importance in the case of coffee*" (italics mine) and says that the superiority of soil No. 1 to Nos. 2 and 3 "would appear to rest on the excess of potash, the lesser proportion of iron salts, and very probably also in the fact that these latter are present in the more fully oxidised state of peroxide and not in that of protoxide of iron."

This richness in nitrogen is accounted for, according to Dr. Voelcker, by the fact that the land is old forest land, and he is of opinion that "it is likely that lime and mineral ingredients are what the soils require rather than more vegetable matter such as would be contained in oilcake, cattle-dung, &c.," and is, in spite of the fact that cattle-dung contains all the constituents which the soil requires for growing crops and is thereby entitled to rank as a perfect and general manure. (Fream.) In his notes at the foot of the above analyses, Dr. Voelcker states that he considers there is a decided deficiency of lime in all three cases; that No. 1 hasn't a sufficiency of potash; and that Nos. 2 and 3 are especially poor in it. Phosphoric acid, he says, occurs in fair but not large amount, and that therefore bones may still be advantageously used. To rectify the deficiency of potash, he advises manuring with wood ashes or some other source of potash, and is of opinion that it would be beneficial in all three cases.

Now I would ask Mr. Nelson whether, if minerals were excluded and his plan of growing E. L. in the coffee and manuring it with the cuttings were adopted in the case of soils like those under notice—and it is to be remembered that the great majority of coffee estates are opened on the sites of old forests and that the land in Southern India is of laterite formation which shows a want of lime and is deficient in phosphoric acid and potash—I would ask whether if his plan were exclusively followed in the cases instanced, Mr. Nelson would consider it all that was necessary or required? He would probably answer 'Yes,' because E. L. cuttings, besides an abundance of nitrogen, contain all the ingredients necessary for the growth of coffee. So does cattle-dung, albeit it may not perhaps be quite as rich as E. L. cuttings, yet Dr. Voelcker objects to its being applied to land already rich in organic nitrogen. It will be interesting to enquire why this should be so. We see that in England or on the Continent green-manuring never enables the farmer to dispense with the application of minerals, although all vegetable matter, according to Professor Munro (Soils and Manures), retains a stock of all the minerals necessary to plants. This is apparent from a quotation which Mr. Nelson makes in his article in *P. O.* of March 6th from the *Royal Agricultural Society's Journal*. Here we read that Deblingar sold all his cattle and adopted green-manuring *supplemented by artificial manures* in place of stable manure. (Italics mine.) I can find nothing in any authority, and I have consulted Munro, Fream and Voelcker, as to the possibility of plants deriving mineral food from humus. Fream says:—"It was formerly thought that humus was capable of serving directly as plant food, but this has been proved to be not the case. Nevertheless, humus is of great value, because the final products of its decomposition—chiefly carbonic acid, ammonia and water—are capable of administering to the food requirements of plants." The other authorities say much the same thing in other words. This refers to humus of any description whatsoever, and would apply to the humus resulting from the decay of E. L. cuttings, the only difference between this and ordinary humus being that perhaps it yields a larger supply of ammonia. Now why is it the case that the minerals in humus are regarded as non-available? They are either apparently practically non-available, or they become available so slowly as not to be relied on to supply plants

with their requirements in this direction. The following quotation from Professor Munro would appear to partially account for this:—"The production of carbonic acid, water, and ammonia become slower and slower as the carbon, hydrogen, and nitrogen in the decayed matter are left behind in combinations more and more difficult to break up, and the particles of humus, however long they have existed in the soil, never become entirely robbed of either of these three elements." This being so and the minerals being bound up in the particles of humus, they cannot be set free till this combination is broken up. We see that in burning cattle manure (bratties) or wood, the carbon, hydrogen and nitrogen have all first to be burnt entirely away before the minerals in the shape of ashes can be set free. To sum up: it is considered necessary by expert authority that green-manuring with leguminous plants does not suffice, that it must be supplemented by the application of artificials, although humus contains a stock of all the minerals necessary to plants. As there is nothing to differentiate the humus resulting from the decay of E. L. cuttings from other humus, it may contain a larger amount of minerals and nitrogen, but it is still practically the same thing; the inevitable inference is that it is just as necessary to supplement green-manuring with E. L. cuttings by artificials as it is in the case of any other green-manuring.

It may be that I have hit upon the right explanation or otherwise, but the fact remains that experts are agreed that humus only yields carbonic acid, water, ammonia, and finally nitric acid for the use of plants and that it is not a source from which the mineral needs of plants are derivable. This being so, it becomes self-evident that "coffee cultivation without manure" is a physical impossibility and as such has to be relegated to dreamland, as something beyond attainment in the present state of knowledge at any rate.

But even if it be admitted that the minerals contained in humus are gradually yielded up, yet the amount would be so disproportionate to the yield of carbonic acid and nitrogen that the danger would arise as put by Dr. Voelcker that "over-richness in nitrogen may produce a rankness of growth, and over-development of leaf to the exclusion of berry" which would render it imperative to make a free use of phosphates and potash to rectify. To come to the practical part of the question: Mr. Nelson has now had some experience of "coffee cultivation without manure": will he enlighten us as to the crops he has obtained under the system he recommends?

There is yet another aspect of the question. I said in my previous criticism of Mr. Nelson's system that if lime were withheld from land treated on his plan, the dangers of too much humus, that is foulness and sourness, would result. He denied this and said that the cuttings decayed very rapidly and that the ammonia emanating from the mass would be rapidly converted by the bacteria in the soil into nitric acid. I am aware that trees are capable of availing themselves of nitrogen in the form of ammonia and nitric acid, but they do so mostly in the form of nitrates. If there is an insufficiency of base in the shape of lime or potash—and it must be remembered that laterite soils are poor in these substances—what then? Would not the rapid accumulation of humic acids give rise to sourness? I know that the carbonic acid emanating from the decay of humus is a useful agent in dissolving minerals from the soil, but the amount would be too gradually available to be of much practical use. Mr. Nelson points to the excellent growth in new clearings in support of his practice, apparently deeming it entirely due to the presence in clearings of an excess of humus. In clearings that have been cleared and burnt, I need hardly say that a lot of mineral food has been made available by the fire. Trees under wood and a great deal of the humus itself have been reduced to ashes, and the particles of clay which contain minerals as impurities, have been made to yield some by the heat to which they have been subjected. In the case of clearings in

which fire has been rigorously excluded, it is impossible to believe that they contain no source of minerals outside what is bound up in the humus. In new land there must be stores of available mineral food which have remained untouched by the vegetation existing previously on them. This is explained by the fact that the substitution of coffee for the vegetation previously existing on the land is a true rotation of crop. We know how rotations of crop acts beneficially. It is owing to crops taking up nourishment in different proportions, thus leaving a residue of food for the next crop.

In conclusion, my object in writing thus much is rather to draw out information than to pretend to impart instruction. I am open to conviction, and if it can be shown that I am wrong, I will be glad to chuck my theories (which I had fondly hoped were founded on the "rock of science") to the winds and "follow my leader."

H. G. R.

TEA.

Science and prices.

A Ceylon contemporary comments on the possibility of the Indian Tea Association deciding upon securing the services of Mr. Bamber, the well-known chemical expert, to visit India next tea season for the purpose of visiting various Indian tea districts, and reporting and advising on the manufacture of tea:—"Such being the case, it would seem advisable for the Ceylon P. A. to take some steps to take advantage of Mr. Bamber's presence in the East to secure similar reports upon Ceylon tea manufacture. Our industry is certainly in greater need of scientific assistance than that of our brother planters in India, seeing the much lower range of prices secured by our produce."

Travancore teas.

According to Sanderson's Mincing Lane Circular, says the London correspondent of the *Mail*, Travancore teas "continue to grow in favour with exporters every day," but of late "the quality has again been disappointing," the bulk "possessing thin plain liquor;" and great care, it is said, should be taken to keep the "whole leaf grades" as uniform as possible, and quite free of dust. A list is given of thirty-three Travancore tea "Gardens" that produce pekoes and souchongs. The average prices of the produce of these Gardens vary considerably, and range from under 5d. to over 7d. per pound. The average of the Aneimudi Garden was 7½d., that of the Bon Ami 7½d., and that of Karnum 7¼d. per lb. during the month ended the 15th instant. The general average for that month was about 6½d. as against 7¼d. for the corresponding month of last year. But the average prices of all teas show a decline in that month, for that of Indian tea fell from 8d. to 7½d., and that of Ceylon from 7½d. to 7d.

Tea Companies.

In an excellent article on "Tea Companies in India and Ceylon," the *Investors' Guardian*, in its issue of the 10th ult., points out the excellent investment thus afforded to the public. After giving an elaborate classification of numerous companies, our contemporary remarks:—

The classification according to the price of the teas produced on the various gardens gives some remarkable results. The Indian companies which produce the best class of teas have obtained a profit on an average of 11.62 per cent., and the cheaper teas gave a return of 9.17 per cent., the better class of tea yielding 2½ per cent.

more than the inferior quality. In the case of Ceylon, however, the reverse holds good. The companies which have produced tea at the average of 8.25d. per lb. have given a much better result for the investor than the better class, the percentages being 12.5 for the former and only 9.1 for the latter.

What of tea-growing as an investment? The statistics above point to it as being a very remunerative undertaking. Tea growing, we believe, is a sound industrial enterprise, and although there are influences, both advantageous and disadvantageous, which will greatly affect the future of the industry and which need to be very carefully considered, under present circumstances we think the debenture stock and the preference shares afford opportunities for safe investment. An average return of 10 per cent. on a capital of 7¼ millions is sufficient evidence of the satisfactory security which the preference shares at least offer as an investment. A considerable proportion of this 7¼ million being preference capital, the dividend upon which is fixed, the amount required for that dividend would be much less than 10 per cent., leaving a large amount than a ten percentage for the ordinary share capital, the surplus constitutes, in effect, an annual reserve for the preference shares. In other words, the security for the preference shares in the aggregate in the above companies is very much more than 10 per cent. which net profits seem at first sight to indicate. Ordinary shares are, of course, more liable to fluctuations, but their value as permanent investments will be inquired into in a subsequent article.

Commenting on the above, the *Times of Ceylon* says: "There is little to add to the above, but especially noticeable is the fact that the return on Ceylon Tea shares was in 1896 10.7 per cent., or 1½ per cent. more than the return on the higher priced Indian teas. Also that the companies that have produced tea at the average of 8.25d. per lb. have given a much better result for the investor than the better class, the percentage being 12.5 per cent. for the former and 9.1 for the latter."

SHORT STORY.

SPOTTED DEER (AXIS MACULATUS) SHOOTING IN MYSORE.

In the early seventies these beautiful animals were found in large herds in some parts of the Mulnaad (a country) of this splendid Native State.

In 1873, I noticed that the Gowda shikaries, near Chikmagalur, used in the dry season to go out with bullocks and return with them laden with spotted deer and other meat, and I ascertained that they shikared round the great Iyen Kerry. This splendid artificial tank, seven miles round, formed by a dam 1,700 feet long, at the Veda river, lies some 12 miles N. E. of Chikmagalur, the headquarters of the Kadur District, and metropolis of that King of Coffee districts, North Mysore.

Other water being very scarce in that vicinity in the dry season, game in vast numbers used to come down from the surrounding hills and frequent the scrub jungle which partially surrounds the tank. The Gowdas used to shoot in tamarind trees, the ripe fruit of which is much eaten by all the deer tribe, and of course pot stags and does indiscriminately. I visited this charming game country with my friend in April 1873, and am afraid to mention the quantity of game we saw. I certainly counted 32 deer in one herd, and my friend and I bagged three fine stags out of it. I have not since had an opportunity of visiting this place, but fancy it can hold nothing like the quantity of game it did, as the pitiful indiscriminate slaughter that has been still going on has almost rid the whole country of all game. There are still places near Sakvalli, and in that neighbourhood, where herds of 8 and 10 spotted deer are to be found.

at good stags are few and far between. The best head I ever heard of being shot in the Mysore country measures 18 inches from burr to tip, and I fancy that must be a record head. I shot one once that was half an inch less, but that was not in Mysore. It seems that the farther north one gets, spotted deer, unlike sambur and bison, carry better heads.

Spotted deer are not easily bagged and can carry a lot of lead. I once, and only once, found a stag with a herd of bison, and as there was no bull worth shooting, I fired at him with a 12-bore rifle as he stood facing me. He turned round and bolted, and on going to the spot I could find no blood, thought I had missed, but the tracker found some white hairs cut off by the bullet, and on looking we found the stag some two hundred yards away, quite dead. The bullet had entered the chest, passed clean through the body, and come out below the tail. On another occasion I fired at a stag with a Martini rifle. He was standing amongst a lot of does, and I took most careful aim behind the shoulder, and expected to see him drop dead, but was much disgusted to see him bound into the jungle. My tracker, however, ran forward and I was surprised to see him hamstringing a doe that was hit in the neck and had fallen some five yards beyond where the stag had stood. I was very sick at this, and thought my bullet had gone over the stag and hit the doe. The tracker, however, after he had cut the doe's throat and made certain she was dead and "could not run away," proceeded to the spot where the stag had stood, and finding blood we followed it up and found the animal quite dead about a hundred yards away in the jungle shot through the body. The bullet had gone clean through and struck the doe's neck beyond. This is not surprising, as everyone knows the penetrating powers of a Martini-Henri rifle with a solid bullet. But confound that doe for coming in the way behind.

Spotted deer, unlike sambur, will never lie up when wounded, but will keep on running as long as life lasts. So a wounded animal should always be followed up at once. Sambur, invariably after going a certain distance, lie down in water if there is any, get stiff and are easily come up with and killed. Therefore, always give sambur time to sicken, lie down and stiffen after you have wounded them before following them up. Unlike sambur, spotted stags are often dangerous when wounded, and should be approached with caution. With their long finely-pointed antlers they can inflict dangerous and fatal wounds. I once knocked one over with an old single barrelled muzzle loader. He lay kicking on the ground and I incautiously ran up to him intending to knife him, when up he got and came at me. Fortunately one of my dogs, a "Bangalore Bull Mastiff," collared him by the throat and pulled him down.

The call of this deer is a peculiar high-pitched sharp "coo" often repeated and which is well imitated by native trackers to call to each other in the jungles. The rutting stags, however, make a most diabolical row, something between the howl of a hyena and the cry of an old hoarse jackall, and I have known many low country natives and some Europeans ascribe it to something supernatural.

Spotted deer appears to feed at all times of the day and

night and are very fond of visiting fruit trees such as goney, tamarind, &c., which ripen their fruit in the hot weather, in the middle of the day, when I have frequently shot them. A friend of mine once had a stack of paddy straw inside a hut on his coffee estate which was all eaten by spotted deer at night. There was no door of course to the hut and the animals visited it every night until all the straw was finished. Let me strongly advise every one on no account to tame and make a pet of this animal, for of all the destructive brutes I ever came across, it is the worst. It will first demolish all your fruit and flower garden, not to mention vegetables. It will then take up its quarters in your house, demolish all papers it can get hold of and then turn its attention to your clothes and linen. I once had one. When I came home one day I found her with all my dogs—they had been trained not to molest tame animals—lying round a fire in a spare room used by me as a sort of drying room and laundry. I noticed the cuffs had been "chewed" off several flannel shirts, and I walked up and stirred her up with my foot with the intention of giving her a good licking and driving her out, when up she got, and standing on her hind legs, attempted to "paw" me. I landed her a kick as hard as I could, and she rolled over on her side and began groaning; but while I was looking about for a knife to finish her with, she got up and bolted. I saw nothing of her for the rest of that day, but that night she came and ate down some choice fruit plants. I am thankful to say a panther killed her shortly after.

D.

"A GOLDEN LEGEND."

A TALE OF THE WYNAAD GOLD DAYS, FOUND IN THE DIARY
OF AN OLD PLANTER.

I.

'Twas up to Ooty fair he rode
From land of Coffee trees,
A youth whose garments showed decay
In different degrees;
A hat he wore with broken brim,
A face sun-burnt and gay;
His horse so used to shocking roads.
That nothing did him stay.
And oh! this planter lad was brave,
Nor fear'd the world to scan,
For in his pocket carried he
A mystic talisman.
He galloped o'er the breezy hills
Like any Tam O'Shanter,
He promised him no end of fun,
Did this light-hearted planter.

II.

Re-dressed and shaved, he scarcely knew
Himself, a gorgeous swell
Stood smiling at him from the glass,
The new kit fits so well.
He said, "I think I'll stroll about
And fashion note at play,
The Badminton and Tennis Courts
Are not so far away."

And there it was he met his fate,
A perfect little Beauty,
In costume quite too lovely and
The very pride of Ooty.
But oh! that planter lad so brave,
At once the siege began,
For in his pocket carried he
A mystic talisman.
In three short words the question asked
She answered "yes" instantler;
Then straightway to the General went
That most intrepid planter.

III.

Said he, "oh! General! great and brave,
The Hero of much slaughter,
I've come a little boon to ask,
I wish to wed your daughter;"
The General stared, he likewise glared,
And roared like British Lion,
"A planter, like your impudence,
This little game to try on.
A Coffee Planter!! Heaven and Earth
Approach my little fairy!
Go back, Sir, to your proper sphere,
Nor dream of wedding Mary!"
But oh! that planter lad was brave,
Nor quailed at scoff or ban,
For in his pocket carried he
A mystic talisman.
Thus to the wrathful sire he said,
In tone of easy banter,
"I also grow cinchona, and of tea I am a planter."

IV.

But nothing Agricultural
He found would prove a charmer;
The General yelled with straining lungs,
"You are but a common farmer;
No doubt you live like any pig,
In hut of dab and wattle,
And light it up with tallow dips
Stuck in an empty bottle."
"No, No," replied the planter lad,
"My house is brick and mortar,
With decoration in high art,
Fit for a General's daughter."
And oh! that planter lad was brave,
He chaffed the angry man,
For in his pocket carried he
A mystic talisman.
And whilst the General raved and swore,
Like a demented ranter,
He simply smiled and let him swear
This even-minded planter.

V.

And presently he calmly drew
From out his pouch a packet,
And said, "perhaps, you'll look at this,
And stop that awful racket;"
Then he displayed a bit of quartz,
With yellow gold, 'twas shining;
"I've got," he said, "a reef of that,
And all the rights of mining.
Enough Brythe declares it's safe to pay
And Segler swears its charming,
And Piman thinks the net returns,
Will almost be alarming!
Suppose we form a company?
You head it—eh! old man!

And give me your fair daughter for
This precious talisman?"
"Done," cried the eager General.
Thus in a common canter,
He gained the day, and won his bride,
This most successful planter.

ROUND THE BUNGALOW.

NOTES BY A PLANTER'S WIFE.

HOME TREATMENT FOR COLDS.

THERE is probably no better means for loosening the grip of or preventing it from tightening, than the "old woman's remedy" of a hot foot-bath and hot drinks, such as herb tea. In a foot or pail one-third full of comfortably warm water, dissolve two tablespoonfuls of mustard. Soak the feet and ankles in the water for twenty minutes, with hot water added from time to time, raising the temperature as high as it can be borne. Wrap a heavy blanket around the patient meanwhile; if there is oppressive heat on the head, apply a wet napkin. Keep up the treatment for ten or fifteen minutes, and, towards the last, when the patient is nearly ready for bed, give a liberal hot draught. Ginger tea is a favourite, so is hot lemonade. White wine whey is a useful drink in colds and mild febrile affections, and is made thus: Boil half a pint of milk in a saucepan, and while it is boiling add a wineglassful of strained whey. Strain, and sweeten as agreeable.

Glycerine for coughs. In severe paroxysms of coughing a spoonful of glycerine in a glass of hot water will give almost instantaneous relief.

Facts about eggs. Eggs should never be cooked before they are twenty-four hours' old, and they are better if kept forty-eight hours, or until their whites are set. The old way of testing eggs—that of putting them in water—is not the best. If they are fresh enough for cooking they will sink; the contrary, if the eggs rise to the surface, air enough has penetrated the shell to make the egg unfit for use, although its yolk may look perfect, and no odour can be detected. Decomposition begins when the contents of the shell are exposed to the external air. The fact of the egg floating in water is proof positive that it has been lightened by air.

The digestibility of hard-boiled egg is a favourite theme. Eggs should never be actually boiled, as the excessively high temperature of the water hardens and toughens the whites at once, rendering them indigestible. If they are submerged in water just below the boiling point, and kept at that temperature for half an hour, they will be nearly as digestible as raw eggs. A good rule to cook eggs for invalids is to pour boiling water into a tin pail having a tight cover, put the eggs in the pail carefully, cover it tightly, and let it stand entirely away from the fire for five minutes. The whites of eggs cooked in this manner will be perfectly coagulated, soft, tender, and easily assimilated.

Domestic use of eggs. To clean vinegar bottles and cruets, or egg-shells in a little water are as good as white of egg with plaster of Paris stir mends broken china. For a burn apply the white of an egg mixed with varnish to exclude the air, or a mixture of the yolk of egg with an equal part of glycerine. If this is put in a bottle and corked tight it will keep for years.

The Wynaad and the Planting Industry of South India, by FRANCIS FORD, Re.1.

The Planting Directory of South India, Re.1-8.

Report of Observations of Injurious Insects and other Crop Pests during the year 1883, with methods of Prevention and Remedy, by Miss ELEANOR A. ORMEROD, F.R.S., Soc., &c., Re.1-8. Apply to

"PLANTING OPINION" OFFICE,
3, ESPLANADE ROW, MADRAS

will keep some time in a cool place. For inflamed eyelids the white of an egg beaten up to a froth with two tablespoonfuls of seawater is a capital thing; it should be applied on a soft rag, changing as it grows dry. For a boil take the skin off a boiled egg, listen it and apply. It will draw off the pus and relieve the pain in a few hours.

I came across the following hint to travellers the other day, which seems too good to be lost:

Hint to travellers. Never use leather straps to trunks which have to go through the Custom House, but instead cord the boxes with the thickest and strongest rope that can be obtained, and knot them with inextricable knots, and give a coat of tar or oil on the knots. The officials have a great hatred of them, and out of pity for their own fingers let these trunks alone, and pass on to those fastened with straps.

Bird lime. Bird lime is composed of linseed oil boiled very carefully and slowly till it is of the required thickness and ropy enough to hold a bird. You must be careful not to have too strong a fire, or the stuff cakes and spoils.

THOMSON'S ANTI-MALARIAL PILLS

THE PLANTERS' FRIEND.

The only known Antidote against Malarial Poison.
A sure and efficacious Remedy for Malarial Fever, enlargement of the Spleen, Malarial Cachexia (Anæmia or Malarial Fever) and other Malarial symptoms.

Sold in bottles containing 100 pills, Rs.2-8.

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PHARMACISTS,
MOUNT ROAD, MADRAS.

NILGIRI PHARMACEUTICAL CO., COONOOR.

FOR SALE.

A DBCF Gun by Dickson and Son, in case with implements, Rs.145.

Gentleman's Coventry, Pneumatic Tyres, (Dunlop-Welch,) Rs.250.

A SB Winchester Express, new, Rs.60.

No. 3 Kodak, without film, Rs.90.

pair of fine Bull-Fox Terrier Pups, about 5 Months, Rs.25 each.

NONE OF THE ABOVE ARE OPEN TO OFFERS.

THE "MADRAS STANDARD,"

Published Twice Daily—Morning and Evening.

THE OLDEST, THE CHEAPEST & THE MOST POPULAR ORGAN IN SOUTHERN INDIA.

Its chief features are:

A LONDON LETTER written weekly by a distinguished Member of Parliament.

Letters from Hyderabad, Mysore (and Bangalore), Travancore, Cochin, and Pudukota contributed by Correspondents well versed in the affairs of those States.

Letters from Far and Near } Political sketches and Caricatures of the leading men in Southern India.
and
Telepathic Interviews.

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2 do do	35	30	20	12 do
1 do do	20	16	12	8 do

2. Special short advertisements for insertion either on the first or on the eighth page.

	$\frac{1}{2}$ Inch.	1 Inch.	2 Inches.
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1. English Advertisements: 4 as. per line, first 4 insertions, 2 as. per line, fifth and following insertions.

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III. CIRCULATION OF LEAFLETS:—

1. For each circulation locally and by post Rs. 25.

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3. For each do. by post only " 15.

(This excludes extra postage where the weight of leaflets necessitates such.)

Advertisement charges are strictly payable in advance, except by w. approved customers.

MARKET SUPPLEMENT.

SATURDAY, AUGUST 28, 1897.

COFFEE.

LONDON advices, dated 6th August 1897, says:—The spot market opened yesterday, when public sales were resumed. No Eastern Coffee was offered, the supply consisting almost entirely of Central American qualities, the greater part of which sold at firm prices to an occasional advance. The receipts in Rio and Santos have continued extremely heavy, and the market for "futures" has further declined; a better tone prevails, however, at the finish and prices close a little above the lowest, viz.:—

London.....Santos.....September delivery...	35s 6d
New York.....No. 7 Rio...	" " 7.25 cents
Hamburg.....Santos.....	" " 36½ pf.
Havre.....Santos.....	" " 44½ francs
Holland.....Good ordinary Java.....	47 cents.

At the Dutch sale in Rotterdam on Tuesday 19,162 bags 192 cases Java sold at irregular rates, but good ordinary brought about valuations, viz., 47 cents, against 46½ cents realised in June.

Imports Deliveries and Stock of COFFEE in London are as follows:—

	STOCK.		IMPORTS.	
	1897.	1896.	1897.	1896.
West India.....tons	432	405	756	1006
Ceylon	136	132	322	360
East India.....	2466	2517	4914	6644
Mocha.....	459	479	472	593
Brazil	2142	1465	1290	1247
Other Foreign	7772	5746	18733	15006
Total tons...	13407	10744	26487	24856
	HOME CONSUMPTION.		EXPORT.	
	1897.	1896.	1897.	1896.
West India	213	337	466	699
Ceylon.....	105	245	207	288
East India.....	1431	1940	1803	3399
Mocha	330	343	141	132
Brazil	756	736	1628	1551
Other Foreign	5900	5331	8153	7207
Total tons...	8735	8932	12398	13276

The preceding figures exhibit:—

In the Imports an increase this year of	1631 tons.
Home Consumption a decrease of	197 "
Export a decrease of	878 "
Stock an increase of	2663 "

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated August 6th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...89,626 packages.	238,857 packages.	8,596 packages.	
1896-1897...86,344 "	"	9,859 "	

MOVEMENTS of TEA in LONDON (in lbs.) during JULY.

	IMPORTS.			DELIVERIES.		
	1897.	1896.	1895.	1897.	1896.	1895.
INDIAN	5,814,912	6,310,617	5,244,696	9,490,723	8,236,610	8,128
CEYLON	10,380,636	10,344,880	7,948,218	8,962,686	8,211,622	8,369
JAVA	293,230	414,540	317,310	381,780	460,950	368
CHINA, ETC.	6,851,340	6,600,037	8,626,024	2,671,243	3,091,384	3,482
TOTAL lbs. ...	23,340,118	23,670,074	22,136,248	21,506,432	20,000,566	20,349

FROM 1st JUNE TO 31st JULY.

	IMPORTS.			DELIVERIES.			STOCK.		
	1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.	1895.
INDIAN	7,907,769	8,388,138	7,072,479	18,509,040	16,824,459	15,846,021	21,633,941	18,314,289	20,349
CEYLON	21,090,100	20,503,238	16,770,760	16,831,132	15,544,812	15,303,076	24,212,148	23,515,960	19,128
JAVA	742,700	1,007,020	651,280	712,180	858,900	742,980	782,740	1,135,830	368
CHINA, ETC.	7,136,887	6,695,088	8,960,408	5,252,855	5,990,039	6,870,517	14,887,371	20,344,655	21,349
TOTAL lbs. ...	36,877,456	36,593,484	33,454,927	41,305,207	39,218,210	38,762,594	61,516,200	63,310,734	61,349

3,282 pkgs. INDIAN } Total 3,527 packages were offered in
— " CEYLON } auction this week.
245 " JAVA }

Owing to the Bank Holiday, business during this week has been practically at a standstill.

Movements of Tea at the London Warehouses during July were 1,000,000 lbs., the amount of Indian and Ceylon Tea delivered being two pounds in excess of last year's figure.

Indian. The small quantity offered included a first rate selection of Assam; as much as 2/11½ was paid for a parcel of 25½ chests of Pekoe from the Samdang division of the Doom Dooma Co.; high prices were also paid for other good liquoring parcels. Season's Export from Calcutta to U. K. up to the end of last month are wired as 25,990,000 lbs. against 26,330,000 lbs. last year.

Week's av. of Tea sold on Garden Account, 1897, 3,120 pkgs., av. 11½d. 1896, 4,898 pkgs., av. 11d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	...2,213 p 1/1½	3,294 p 1/0¾	15,602 p 10½	15,127 p 10½
Cachar and Sylhet.	364 p 5¼	897 p 7½	12,557 p 6¼	12,407 p 6¼
Chota Nagpore	... —	—	211 p 3½	105 p 3½
Darjeeling	... 134 p 10½	201 p 1/1	8,722 p 9¼	5,792 p 9¼
Dooars	... 276 p 7¼	—	5,929 p 7¾	3,182 p 7¾
Kangra, &c.	... 133 p 7	—	633 p 6½	858 p 6½
Neilgherry	... —	—	788 p 6½	503 p 6½
Terai	... —	—	106 p 8½	65 p 8½
Travancore	... —	506 p 6½	6,822 p 6¼	5,373 p 6¼

Total sold on Garden Account 1st June to date 1897, 51,370 pkgs., 1896, 43,412 pkgs., av. 9d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.
DUST. (Fair ordinary, dark liquor)	3½d	4½d	4½d
FANNINGS. (Red to brown, strong rough liquor)	4d	5d	4½d
BROKEN TEA. (Brownish to blackish, strong liquor)	6½d	7½d	6d
PEK. SOUG. (Blackish greyish, useful liquor)	6½d	8d	7½d
PEKOE. (Greyish to blackish, some tip, useful liquor)	8½d	9d	8½d
PEK. SOUG. (Blackish greyish, inferior liquor)	5d	5½d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor)	5½d	6½d	6½d

Ceylon. None were offered this week but over 42,000 packages of Ceylon Tea were printed for sale on Tuesday next, the largest quantity ever catalogued in one day. The official telegram from Colombo states that shipments of Ceylon Tea to U. K. during July amounted to 10,250,000 lbs. Seven and a half to seven and three quarters million pounds are estimated for the month.

Java. These kinds met with rather more attention, and prices in some instances showed a slight improvement.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

COONOOR, SATURDAY, SEPTEMBER 4, 1897.

[No. 23.]

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VERTISEMENTS.—Five-line advertisements from Subscribers inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

3.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been moved to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c. Letters to the Editor should be addressed to Coonoor, Nilgiris.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 10th September 1897.

Nellampathy, British.

1st September.—*Weather.*—Rain for week 6.24, to date 143.21. It seems as if we had reached the end of the S. W. and were just about to commence the N. E. These last few days have been dull with very little wind, and what there has been has been shifting about. *Plant-diseases.*—As last reported. *General Health.*—Bad: a lot of sickness about both among Europeans and coolies. *Labour.*—Plentiful.

Nilgiris.

COONOOR, 2nd September.—*Weather.*—Very cloudy and rainy weather with no prospects of a good break. Most unusual (of course, weather always is unusual!) for the time of year. Rain welcome to both coffee and tea, but we all want a little sun. *Crops.*—Coffee picking up from its very severe go of leaf disease. Fairish blossom set on high elevation gardens. Tea beginning to flush decently again. Red spider very bad in places. Black bug off colour a trifle. Flushworm still unusually prevalent. Price of grain still very high. Badaga grain crops very good this year. *General Health.*—Indifferent. *Labour.*—Ample.

OOTACAMUND, 1st September.—Rainfall for month 15.57, making 42.72 to date. Temperature highest and lowest 74° and 60° respectively. Weather as vile as ever since last report, with a persistent cold wind and continued, unsuitable for flushing and making manufacture of decent tea almost an impossibility. Grains still rising in price. Health good, and coolies plentiful.

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MARKET SUPPLEMENT.

SATURDAY, AUGUST 28, 1897.

COFFEE.

LONDON advices, dated 6th August 1897, says:—The spot market opened yesterday, when public sales were resumed. No Eastern Coffee was offered, the supply consisting almost entirely of Central American qualities, the greater part of which sold at firm prices to an occasional advance. The receipts in Rio and Santos have continued extremely heavy, and the market for "futures" has further declined; a better tone prevails, however, at the finish and prices close a little above the lowest, viz.:—

London.....Santos.....September delivery...	35s 6d
New York.....No. 7 Rio....	" " 7.25 cents
Hamburg.....Santos.....	" " 36½ pf.
Havre.....Santos.....	" " 44½ francs
Holland.....Good ordinary Java.....	47 cents.

At the Dutch sale in Rotterdam on Tuesday 19,162 bags 192 cases Java sold at irregular rates, but good ordinary brought about valuations, viz., 47 cents, against 46½ cents realised in June.

Imports Deliveries and Stock of COFFEE in London are as follows:—

	STOCK.		IMPORTS.	
	1897.	1896.	1897.	1896.
West India.....tons	432	405	756	1006
Ceylon	136	132	322	360
East India.....	2466	2517	4914	6644
Mocha.....	459	479	472	593
Brazil	2142	1465	1290	1247
Other Foreign	7772	5746	18733	15006
Total tons...	13407	10744	26487	24856
	HOME CONSUMPTION.		EXPORT.	
	1897.	1896.	1897.	1896.
West India	213	337	466	699
Ceylon	105	245	207	288
East India.....	1431	1940	1803	3399
Mocha	330	343	141	132
Brazil	756	736	1628	1551
Other Foreign	5900	5331	8153	7207
Total tons...	8735	8932	12398	13276

The preceding figures exhibit:—

In the Imports an increase this year of	1631 tons.
Home Consumption a decrease of	197 "
Export a decrease of	878 "
Stock an increase of	2663 "

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated August 6th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...89,626 packages.	238,857 packages.	8,596 packages.	
1896-1897...86,344 "	"	"	9,859 "

MOVEMENTS of TEA in LONDON (in lbs.) during JULY.

	IMPORTS.			DELIVERIES.		
	1897.	1896.	1895.	1897.	1896.	1895.
INDIAN ...	5,814,912	6,310,617	5,244,696	9,490,723	8,236,610	8,128
CEYLON ...	10,380,636	10,344,880	7,948,218	8,962,686	8,211,622	8,369
JAVA ...	293,230	414,540	317,310	381,780	460,950	368
CHINA, ETC. ...	6,851,340	6,600,037	8,626,024	2,671,243	3,091,384	3,482
TOTAL lbs. ...	23,340,118	23,670,074	22,136,248	21,506,432	20,000,566	20,346

FROM 1st JUNE TO 31st JULY.

	IMPORTS.			DELIVERIES.			STOCK.		
	1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.	1895.
INDIAN ...	7,907,769	8,388,138	7,072,479	18,509,040	16,824,459	15,846,021	21,633,941	18,314,289	20,346
CEYLON ...	21,090,100	20,503,238	16,770,760	16,831,132	15,544,812	15,303,076	24,212,148	23,515,960	19,346
JAVA ...	742,700	1,007,020	651,280	712,180	858,900	742,980	782,740	1,135,830	21,346
CHINA, ETC. ...	7,136,887	6,695,088	8,960,408	5,252,855	5,990,039	6,870,517	14,887,371	20,344,655	21,346
TOTAL lbs. ...	36,877,456	36,593,484	33,454,927	41,305,207	39,218,210	38,762,594	61,516,200	63,310,734	61,346

3,282 pkgs. INDIAN } Total 3,527 packages were offered in
— " CEYLON } auction this week.
245 " JAVA }

Owing to the Bank Holiday, business during this week has been practically at a standstill.

Movements of Tea at the London Warehouses during July were factory, the amount of Indian and Ceylon Tea delivered being two pounds in excess of last year's figure.

Indian. The small quantity offered included a first rate selection Assam; as much as 2/11½ was paid for a parcel of 25½ chests Pekoe from the Samdang division of the Doom Dooma Co.; high were also paid for other good liquoring parcels. Season's Export to Calcutta to U. K. up to the end of last month are wired as 25,990,000 against 26,330,000 lbs. last year.

Week's av. of Tea sold on Garden Account, 1897, 3,120 p av. 11½d. 1896, 4,898 pks., av. 11d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam ...	2,213 p 1/1½	3,294 p 1/0½	15,602 p 10½	15,127 p 10½
Cachar and Sylhet..	364 p 5½	897 p 7½	12,557 p 6½	12,407 p 6½
Chota Nagpore ...	—	—	211 p 3½	105 p 3½
Darjeeling ...	134 p 10½	201 p 1/1.	8,722 p 9½	5,792 p 9½
Dooars ...	276 p 7½	—	5,929 p 7½	3,182 p 7½
Kangra, &c. ...	133 p 7	—	633 p 6½	858 p 6½
Neigherry ...	—	—	788 p 6½	503 p 6½
Terai ...	—	—	106 p 8½	65 p 8½
Travancore ...	—	506 p 6½	6,822 p 6½	5,373 p 6½

Total sold on Garden Account 1st June to date 1897, 51,370 pkgs., 1896, 43,412 pkgs., av. 9d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.
DUST. (Fair ordinary, dark liquor) ...	3½d	4½d	4½d
FANNINGS. (Red to brown, strong rough liquor) ...	4d	5d	4½d
BROKEN TEA. (Brownish to blackish, strong liquor) ...	6½d	7½d	6d
PEK. SOUG. (Blackish greyish, useful liquor). ...	6½d	8d	7½d
PEKOE. (Greyish to blackish, some tip, useful liquor) ...	8½d	9d	8½d
PEK. SOUG. (Blackish greyish, inferior liquor). ...	5d	5½d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor) ...	5½d	6½d	6½d

Ceylon. None were offered this week but over 42,000 packages printed for sale on Tuesday next, the largest quantity ever catalogued one day. The official telegram from Colombo states that ship tea to U. K. during July amounted to 10,250,000 lbs. Seven and a half to seven and three quarters million pounds are estimated for the month.

Java. These kinds met with rather more attention, and prices in instances showed a slight improvement.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

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COONOR, SATURDAY, SEPTEMBER 4, 1897.

[No. 23.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

P.O.B.—Remittances should be sent to the Manager, “Planting Opinion,” Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been moved to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c. Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 10th September 1897.

Nellampathy, British.

1st September.—Weather.—Rain for week 6.24, to date 143.21. It seems as if we had reached the end of the S. W. and were just about to commence the N. E. These last few days have been dull with very little wind, and what there has been has been shifting about. *Plant-diseases.*—As last reported. *General Health*—Bad: a lot of sickness about both among Europeans and coolies. *Labour*—Plentiful.

Nilgiris.

COONOR, 2nd September.—Weather.—Very cloudy and rainy weather with no prospects of a good break. Most unusual (of course, weather always is unusual!) for the time of year. Rain welcome to both coffee and tea, but we all want a little sun. *Crops.*—Coffee picking up from its very severe go of leaf disease. Fairish blossom set on high elevation gardens. Tea beginning to flush decently again. Red spider very bad in places. Black bug off colour a trifle. Flusworm still unusually prevalent. Price of grain still very high. Badaga grain crops very good this year. *General Health*—Indifferent. *Labour*—Ample.

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THE RISE IN EXCHANGE.

It is astonishing how little has been written about Exchange from the planter's point of view. Mr. G. L. Acworth spoke on the subject at the Annual Meeting of the U. P. A., but his remarks do not appear to have evoked either criticism or commendation from the daily press. Perhaps, the preponderating influence of the official classes accounts for this? Then, too, it is probable that the predilection of merchants leans towards a high Exchange rather than a low one, for though many an Anglo-Indian merchant makes his money in the Export trade, most wish to enjoy their savings eventually in Europe. The higher the exchange, the greater the sterling value of these savings. This may affect the planter also. But in order to *make* large profits he desires a *low* Exchange. He can do nothing to control it, unless he can obtain the co-operation of merchants and others. What, then, is he to do, when such co-operation is denied him? At the very least, he can manifest an interest in what is of vital concern to him. We should be very glad to see planters exchanging notes as to the way in which they, or their agents for them, work their Exchange operations: how they conduct the financial transactions indispensable to the realisation of proceeds of their crops. Some, no doubt, take advances; some draw them in sterling at the exchange of what we may call 'an early day'; others let the exchange be settled when remittances from Home are finally made or paid. Do these differences result from chance alone, or are they the outcome of forethought as to the probabilities of Exchange? Do individual planters *vary* their system, according to their anticipations of the course the rupee will take? It seems to us that remarks on this point, in the first place strictly from the planter's outlook, would be of general interest to the community, and that a comparison of notes on the subject might serve a very useful purpose. No amount of discussion can affect the future of Exchange. Yet every planter has something either to teach or to learn, and if a discussion on Exchange merely enlightens the community as to probabilities, it may assist them to lay their plans so as to be able to profit by the new knowledge gained. The probabilities referred to may be little better than chances, so uncertain is the course of Exchange. Those who wish to "trust to luck" can still do so, however; while men who prefer to try to see ahead may endeavour to weigh one probability against another, with a view to forecasting the general trend of Exchange, and adapting their plans to their anticipations.

GENERAL NOTES AND ARTICLES.

Tobacco in Borneo.

We fancy that tobacco cultivation in India is much on a par with cotton. Excellent varieties of both *can* be grown from fresh imported seed, but, being left to the ignorant ryots, neglect of

preservation of the good seed rapidly leads to its deterioration. It is difficult to suppose that a climate and soil equal to either those of Java and Borneo cannot be found throughout the length and breadth of India and Burma. What Borneo and Sumatra have achieved already may be noted from the fact that the Deli Maatschappij has recommended a dividend of 42·7 per cent. for 1896!

At the recent meeting of the London Chamber of Commerce, Mr. W. B. Pryer delivered an address on 'Prospects of Commercial Development and Planting in British North Borneo.' Mr. James Chambers (President of the Chamber) took the chair. Among the speakers was Mr. J. R. Freeman, who, as perhaps the largest user in the past of Borneo tobacco, could speak with some authority on it. It stood only next to Havana; but that position could only be maintained by retaining the excellent quality which it possessed if properly cultivated. There had been rivals to Havana in the past, but he would warn those interested in Borneo that the reputation of the tobacco would suffer if any attempt were made to produce a larger quantity than there was suitable land to provide. Borneo tobacco was superior to that of Sumatra. The latter could only be used for covers, where the Borneo leaf possessed a special flavour, and its future was bright in view of the reduced supplies from Cuba owing to the insurrection. He thought there had been a little laxity on the part of Borneo estates, who had reduced the market value of their tobacco by not paying the same attention to its classification and packing as was paid by Sumatran producers. Mr. R. B. Martin, M.P., said he came to that meeting principally with the object of hearing the views of those actually engaged in business, and welcomed all suggestions for the better development of the Borneo trade. He agreed with Mr. Freeman as to the quality of Borneo tobacco and as to its future. There was a great future also for other products.

Tobacco of last June says:—The appreciation in value of Borneo and Sumatra tobacco continues, prices as high as 4s. 4d. per lb. being obtained at both of the last two sales in Amsterdam. As compared with last year's the average price is astonishing, being 158 cents. per ½ kilo. against 100 cents. Holders of shares in the tobacco-producing estates of Borneo and Sumatra can well afford to regard the situation with equanimity. The great Deli Maatschappij recommended a dividend for 1896 of 42·7 per cent., and a reserve of half as much again as the capital of the company. What will its next dividend be?

Cultivation.

We have often been struck by the inability, more or less frankly expressed, of practical planters to explain satisfactorily what principles some of their usual routine work was based on. In forking or digging for instance, whether light or deep, before or after the monsoons, the most contradictory answers have been given us. Yet it is obvious enough that if the rainfall is usually more than is required every effort should be made to retain as little in the soil as possible, and let all digging operations be finished long before the rains commence, so as to get a compact surface for the rain to flow over. On the other hand, in most tea-districts, for instance, where the rainfall is usually deficient, deep forking should be resorted to *before* the rains, so as to absorb all moisture possible. After the rains are over, the plan-

the wet district should cultivate as deep as possible so as to get rid of the superfluous moisture in his soil. While in dry districts, he should cultivate very lightly, but as deep as possible, so as to "mulch" the surface and prevent evaporation.

For this light cultivation we would recommend special implements being made, 18 inches in breadth, with small prongs about 4 inches long set in the cross bar some 1½ inches apart. Where the land is at all level, much better and cheaper work could be done by using a modified "horse-drawn" light enough to be dragged by a single coolie, the man directing it from behind. The cost of weed-destroying would be almost entirely saved, while, in dry districts, the gain in crop in times of drought would be immense. To illustrate the peculiar value of such light cultivation, we give the following extract from the *Planters' Monthly*:—You all have noticed recently going around a new system that has been adopted by a man in Chicago for cultivating the semi-arid lands of the West, where they have a rainfall of less than ten inches. He has proven by his system (I do not vouch for it) that he can carry a crop through the summer upon ten inches that fell during the winter, and his plan is a good one. Just before the summer he breaks his land deep with a pair of horses—say 8, 10, or 12 inches deep—to hold all the water that falls during the winter. At the moment he gets ready to prepare his crop in the spring, he does as Mr. Dymond says the disk does. He has a plow with a com- ing attachment, and by this he retains the moisture and prevents evaporation, and then plants his crop and secures it without a drop of rain. He can thus make a crop of corn. Experiments have been made and proved satisfactory. It is a well-known fact that we get along in dry weather by making a loose mulch of the soil and then press it after loosening it, which a disk does, and thus we have broken the continuity of the pores of the soil, the moisture capillary attraction is checked and retained there. If, on the other hand, we loosen up the soil, we increase the evaporation and drive the water off.

Continuous trenching should again be only undertaken in dry districts during the monsoon rains, and closed up immediately after the rains are over. Though in wet districts trenching is very useful in stopping wash, the same effect might be attained just as well, if not better, by digging drains instead of trenches between every alternate third row of trees. This would stop wash and allow the water to drain off readily, whereas in the trenches it would be arrested and soak into the soil. In these over wet districts, trenching might be begun *after* the rains are over, to dry up the soil, and "winter" the trees (if coffee).

A RAILWAY FOR THE MYSORE AND COORG COFFEE DISTRICT.

REFERRING to my communication on the "Coorg Railway," which appeared in *Planting Opinion* of 7th August, the following is a sketch in rough of a line which would serve the coffee districts of both Mysore and Coorg, and should commend itself, I think, to the planters of both provinces. I submit it as a practicable scheme to work with in their efforts to obtain railway communication, though there seems little chance of any proposal being listened to while the Imperial Government is engrossed with famine affairs. After famine, however, there often follows a season of plenty, and it may not be long before new railway schemes engage attention.

When alluding to a line between Hassan and Sidapur, and to be in favour with the Chief Commissioner of Coorg and the Mysore Durbar, I remarked that I could not see the

raison d'être for such a railway. In saying this I looked upon it as the Coorg men represented it, namely, as a line by itself. But it would be quite another matter if the intention were to continue it on to Tellicherry. When viewed from this point it assumes a very different aspect.

When the distance from Hassan to Tellicherry *via* Sidapur is totalled up, it comes to some 125 miles, and when we compare this with the distance from Hassan to Mangalore by the direct western route, the difference is only about 15 or 20 miles—a fact which I daresay will come as a surprise to many who have not had their attention drawn to it. If the line starting from Hassan followed a trace by Arkulgode, Ramnampur, Periapattam and thence to Sidapur, it would skirt the eastern boundary of North Coorg and come fairly within easy reach of the estates in South Coorg.

But the scheme I wish to bring more particularly to notice is of a more comprehensive character and would, I think, serve the whole of the Mysore coffee districts, north as well as south, from Koppa in the north to Coorg in the south.

Hitherto the idea has been to make a start from Arsikere on the Southern Mahratta Railway and thence to Hassan. Why this point has been selected I cannot say. There are probably inducements apart from any connection with the planting interests. But if instead of Arsikere the line branched off at Kadur to Chikmagalur, it would make all the difference, for a much more extensive portion of the planting districts could be brought within its scope. Chikmagalur is an important centre, having a number of estates in its neighbourhood and the headquarters of a large native coffee business, Businalli native coffee being well known. A branch to Chikmagalur would in itself be of great service; but instead of a simple branch if the line be continued southward to Belur and thence to a point near Polliam with a branch to Hassan, or to Hassan direct, and from there *via* Arkulgode to Sidapur and Tellicherry as already detailed, it would serve a large stretch of planting country. But more than this, the connection at Kadur would bring the estates in the extreme north of Koppa within range of the proposed line, for at present a branch is being made from Birur, a station on the Southern Mahratta Railway four miles north-west of Kadur, to Tarikere and Shimoga, and a road runs from Koppa to Tarikere, so that the men of that district could put their coffee into the railway there and have it sent all the way to Tellicherry without a break.

To repeat, say you start from Tarikere, you run on to Kadur, branch off there to Chikmagalur, and on to Belur, Polliam or Hassan, Arkulgode, Ramnampur, Periapattam, Sidapur, Veerajapett and Tellicherry.

Now let us see what are the distances, using the mileage of the present roads as a pretty close approximation:

Tarikere to Tellicherry is	...	207 miles.
Chikmagalur to do.	...	164 "
Hassan do.	...	125 "

The Polliam route would be still nearer.

Sidapur to Tellicherry	...	60 miles.
------------------------	-----	-----------

Many men send their coffee to Madras; well here are a few of the distances:

Tarikere to Madras	...	364 miles.
Chikmagalur do.	...	371 "
Hassan do.	...	351 "

Of course, against these figures there is Mangalore for estates lying close to the Western Ghats, but few of them

are nearer that port than 80 or 90 miles, while most of them would be much farther.

Periapatam would no doubt in time be linked up with Hunsur and Yedatore to the capital Mysore, and as the Coorg men say it is on the cards to make a line from Hassan *via* Yedatore to Mysore, the planting districts would have a connection both east and west.

Local men may see local difficulties as well as objections generally. These could be brought forward and discussed, but the scheme has at least this to recommend it; it would place railway accommodation within comparatively easy reach of all these planting districts. Roughly the Mysore estates, extending from Kodlipett on the south to Koppa on the north, are spread over a ribbon of country, and to simply cut across this as the Arsikere-Mangalore line was intended to do would be to afford little or no accommodation to the parts lying north or south of it. To run the line along this track itself, in place of keeping somewhat east of it as I propose, would, I apprehend, involve greater engineering work and probably engineering difficulties, besides exposing it to a heavier rainfall. Skirting the eastern verge of the coffee districts it would also serve the country lying along its eastern boundary, and viewed as a trunk line branches both east and west could afterwards be formed to afford greater facilities for any particular locality.

The portion lying in Mysore Territory would, of course, concern the Mysore Government, but if the Government of India were disposed to take the matter in hand, it could be dealt with as the Arsikere-Mangalore line was intended to be.

STEAM.

THE GOVERNMENT CINCHONA PLANTATIONS.

We quote the following article in full from the *Madras Mail*, and heartily join in our contemporary's congratulations to Mr. Standen on the remarkable success he has achieved:—

The late Mr. M. A. Lawson, who for twelve years had controlled the Cinchona Plantations of the Madras Government on the Nilgiris, died early in 1896, and Mr. W. M. Standen, a planter of some sixteen years' experience and of established reputation, was appointed to succeed him. It is an open secret that this appointment, though passed in Calcutta, did not find favour at the India Office. The Secretary of State, preferring doubtless that he should select an officer as he had selected the late Mr. Lawson, withheld his sanction, and in the euphemistic phrase of the Madras Government, the matter "was under correspondence" during the year. Finally the authorities in London gave way and agreed to the Madras Government's nominee holding office, at least on a five years' trial. It must, therefore, be a considerable source of satisfaction to the Government to find, as appears from the Annual Report on the Cinchona Plantations during 1896-97, that the results of that year's working under Mr. Standen's control have been so satisfactory as fully to justify its selection. During the twelve years of the late Mr. Lawson's control, the revenue of the Department only twice exceeded the expenditure, and then only by a sum of about Rs.1,500. In the year 1896-97, on the other hand, a surplus of Rs.69,000 has been shown, the expenditure being reduced, while the receipts were Rs.42,000 more than in the previous year. The Government, never very lavish of praise, remarks that "the administration of the Department must, in these circumstances, be considered to have been eminently successful." It is certainly lucky for Mr. Standen that he has so rapidly been able to justify his existence and to prove to his critics in the *Pioneer* and elsewhere that he means business.

The remarkable improvement in the results of the Government's Cinchona enterprise during 1896-97 appears to have been due to a very simple cause. The quantity of bark used in that year was practically the same as was used in the previous year, 238,000 lbs. as compared with 234,000 lbs. But the quantity of drugs extracted has

risen from 5,900 lbs. to 11,241 lbs., or by very nearly cent. per cent. The percentage of the yield of quinine to bark was 3·3 as against the previous year, or more than double; and the effect has been to turn the operations, which for years had been conducted at a loss into a very paying concern. The increased yield from the quantity of bark was, of course, due to the more thorough extraction of the alkaloids, and it certainly does not say much for the efficiency of the previous régime that it was left for Mr. Standen to discover this. At any rate it is well that it has been discovered at last, and it must be regarded as a triumph for the Madras Government, so important an advance has been made by its nominee. The results of the working of the Cinchona Department in 1896-97 appear to have been equally good. The quantity of quinine manufactured and the quantity sold during the year were the highest on record. The sales of the drug are now mainly conducted through the India Office. The quinine is made up in five-grain powders, and there were 1,550 Post Offices in the Presidency where these are kept. The plan is to bring the alkaloid to the doors of the people and to supply it at cost price and in small quantities. Apparently this plan is to succeed, for though it was only started in July, 1895, 4,180 packets were sold in 1896-97 as compared with 664 packets in the previous year. As the diffusion of the use of quinine among the population can hardly be other than beneficial, this aspect of the Government's enterprise in cinchona can be entirely applauded. The whole output of the Government plantations is thus utilised, and the objections to the growing of cinchona by the State have been met, for the system of Post Office distribution reaches a point which, otherwise, would never use the drug at all. The most difficult thing to ascertain from an Annual Report such as that under review is the actual state of the plantations; and this is doubtless the crux of the management. It is stated, however, that there were 31,500 more trees at the end of the year than at the beginning, and that a new system of transplanting seedlings was introduced which is expected largely to reduce casualties. As the good final results were produced without any increase in the amount of land consumed, there is no reason to suppose that the plantations are over-cut, and the general impression left by the Report is a highly favourable one.

In reply to an acrimonious attack by a correspondent on the correctness of the figures given above, our contemporary replied in a later issue. "In a letter ending with the *nom de guerre* 'Rombo Caichal, Iyah,' a correspondent in our issue of the 25th inst. suggested that the figures we lately published regarding the Government Cinchona Plantations in 1896-97 were 'so extraordinary that they seem to require confirmation before being accepted.' Particular statements to which our correspondent apparently alluded were the assertion that the quantity of cinchona alkaloids extracted during 1896-97 was nearly double that extracted during 1895-96, although the amount of bark used was practically the same. We had added that the percentage of the yield of quinine to bark was 3·3 as against 1·5 in the previous year, and our correspondent proceeded to suggest a doubt whether the alkaloids which we referred to might not be the inferior forms other than sulphate of quinine, and that the results which we attributed to Mr. Standen's management were in fact too good to be true. As our statements were based on the figures furnished in the Government Review of the Report of the Director of Cinchona Plantations, they were likely to be inaccurate; but in consequence of the insinuations of 'Rombo Caichal, Iyah' has seen fit to make, we have further examined the matter, and find, as might have been expected, that the Government's figures as given in the Review are entirely accurate. The Report of the Director of Government Cinchona Plantations shows the following results of manufacture during the two last years:—

	Bark used	Quinine	Febrifuge	Total alkaloids
1895-96	lbs. 233,800	3,600	2,284	5,884
1896-97	lbs. 238,100	7,891	3,350	11,241

From these figures it will be apparent that our statements that the yield of alkaloids had increased by nearly cent. per cent. and that the yield of quinine to bark was 3·3 per cent. in 1896-97 as against 1·5 per cent. in the previous year, were in accordance with the facts of the case. Our correspondent's further suggestion, that the yield of cinchona alkaloids to bark treated has thus enormously increased the quinine should be tested to see whether it is pure, seems to savour of some bias, making him unwilling to believe in the success which Mr. Standen has undoubtedly attained.

ever this may be, the remedy is in our correspondent's own hands. He has only to buy some of the quinine and have it tested himself. In the meantime the result of his letter is to show that improvement which Mr. Standen has effected in the conduct of his Department is, in the opinion of an obviously critical observer, extraordinary."

LETTERS TO THE EDITOR.

ANSWER TO CORRESPONDENTS.

"T. S." Many thanks for the extract, but the information given is scarcely correct. China teas certainly have been sold for 4½d. per pound this year, but for the poorer qualities this is by no means unusual. It was not many weeks ago that the weekly average for all India ran down to 4d.—Ed.]

THE COFFEE CAMPAIGN: A CORRECTION.

SIR,—I am afraid I made a slip in that letter in which I took of the coffee duty being 3d. per lb. I was trusting to my memory. It is I believe only half; that would make 14 shillings added to 90 shillings instead of 28/. It still brings the price high, but not so high as I thought. I, however, think there is little chance of the Indian planters extending business on these figures, and hence my line of reasoning might stand if the figures can be corrected.

A HARD NUT.

CONSUMPTION OF COFFEE IN INDIA.

SIR,—I have on several occasions been at the Ooty Bazaar, and less than 2 cwts. of coffee are tendered and sold weekly by a population we will take for convenience at 20,000 for the district (exclusive of Coonoor, Kotagiri and Goodalore). If my surmise is at all correct, rather more than less than 100 tons is consumed annually by the Ooty Bazaar alone. On this basis, taking the population of India at 300,000,000, we have a consumption of 75,000 tons, and whence does this come? Native-grown coffee will account for some, sale of tailings and black coffee for a good deal, and I think theft for a considerable portion: but that the Indian consumption is tons more than you estimate is manifest, even making a 25% allowance for those who do not know of or appreciate the drink.

With an experience of India from the distant Himalayas to the Cape Comorin, I have rarely found a bazaar where coffee was not sold.

SPECTATOR.

A. GRIFFIN'S IDEAS:

DEAR SIR,—There are several mistakes in my letter in your issue of the 21st, but I shall only correct those that do not make any meaning clear.

Para. 3, line 9, instead of "by having so" read "after he had done so." Para. 4, instead of "3 chatties manure, read water."

In last para. "after I can supply" add "cattle manure," though I omitted a portion of my letter which you have omitted. It should read "I do not think we need a specialist to go into the question of leaf disease." I am sure we have sufficiently experienced planters, Mr. Nelson for instance, who could by close examination of plants in gardens not affected by leaf trace cause and thus bring back coffee to its old condition.

In my letter I omitted to refer to my nursery. From this I move all shade as soon after the first leaves are shed as possible, say in six weeks from time of sowing; I then gently open to the earth, add a very small quantity of cattle manure, which is well mixed up. The plants are then regularly watered and allowed to grow up in the open. The hot sun in February, March and April, instead of burning up the young plants, causes quick and healthy growth.

This year I was very late in putting in my seed. I got them in March, but the young plants, some 6,000, now stand fully foot high, thoroughly healthy, and many have their first set of primaries. I do not think that the sun has scorched a single plant.

When the Conference was on in Bangalore, I wrote to two or three gentlemen asking them to kindly visit my garden, but did not receive a reply; possibly my letters (posted) did not reach. I should have been glad to have had their opinions, and good might have resulted. Possibly, however, they are still dead against coffee under irrigation and our system of planting.

Your correspondent "Benki" proposes a running fire through a garden; this might be useful, but the best way to try and get rid of our leaf would be to trust more to nature. I should certainly begin by thinning all shade and removing at the close of the monsoon as much of the decayed leaf and other rubbish likely to retain moisture as possible. If shade is necessary, I should have only sufficient to cut the heavy South-West winds, but not thick enough to shut off the sun. Let the plants have as much of this as possible, especially where rainfall is heavy.

A planter told me some time ago that coffee has been known to die out for want of shade. Was it want of shade that actually killed the plants, or some other cause not at the time thoroughly investigated?

At Londa, Dharwar and Bangalore we have trees certainly over 15 feet high and several years old still bearing heavy crops. These are uncared for and in the open. No one knows when they were planted, but they have the appearance of very old trees, BANGALORE.

J. PARTRIDGE.

LEAF DISEASE.

I.

SIR,—I have read the letters signed "Benki" and "J. Partridge" re leaf disease in your issue of the 21st instant. In reply to "Benki," I would say there can be no possible doubt that fire would kill the disease, being a fungoid growth, but that I do not see that his recommendation is practicable. We may presume, from experience, that the long droughts of Southern India are more or less inimical to the disease, and that exceptions to droughts only go to prove the rule. That is to say, an exceptional wet year, without the usual long dry season intervening, is just the year the enemy revels in. I am, therefore, one of those composing, I should think, the great majority of planters who look upon a dry season of sufficient length, and at the right time, as an absolute desideratum if the coffee tree is to fruit and give us good crops. Without properly wintering, it is folly to expect it to yield. It must run to leaf when constantly exposed to damp atmosphere. Of course, at the same time, it is possible to have too long a dry season from which the spike will suffer; but, on the whole, there can scarcely be any question, to judge from experience, that too long a wintering is far preferable to a wintering cut short by unseasonable rain. The dry season of 1895-96 was most exceptionally prolonged, reaching to over five months in most coffee districts, but at the end of it I thought I had never seen coffee look better during the twenty odd years I have known it. Had that dry season lasted but four months instead of over five, I have no doubt whatever it would have made all the difference in the world to most estates. As it was, many estates, notwithstanding having chronicled no rain for over five months, from my personal knowledge, picked very good crops and left handsome profits—estates which would have given bumpers had the rain come in time to suit all the spike. That season followed by the very wet one of 1896-97 has put our old friend out of gear, but I cannot see any reason to suppose seasons will not revert to normal conditions again.

Apparently, Mr. Partridge has gone in for growing his coffee near Bangalore, in what we, in these parts, call the native style, by not topping the trees; and he enunciates therefrom theories which he will, I think, soon enough find out will not stand the test of experience. He must remember that coffee has not been grown in the hills of Southern India for the last fifty years or more without men knowing something about it,

and that he himself is still in nothing more than an experimental stage in the more or less arid country round Bangalore. His friend, who has just returned to Bangalore, also seems to be partial to that part of the country, and so I wish them both good luck. More power to their elbows, and a profitable experience.

NELLACOTTA, }
23rd Aug. 1897. }

SEMPER FLOREAT.

II.

SIR,—Mr. Partridge has been kind enough to give us his short experience with leaf disease, although not himself a planter. There are many of us who might follow his example, and give our experiences likewise, no matter how open to criticism they may be, or how erroneous our deductions. There cannot be the slightest doubt that the reason men do not give their views on matters planting more publicity is because, "It is so awkward too, you know, to find your pet idea given with so much confidence to a doubting world, cut up by abnormally critical correspondents." (*P. O.*, May 22nd, 1897.) In my turn I shall become abnormally critical and send you a cutting from the *Madras Mail* taken some years ago, which will, I am afraid, "cut up" some of Mr. Partridge's deductions. Mr. Partridge writes: "The point that struck me from the first was, why not allow coffee plants to grow up as nature intended that they should. Surely it was not intended that coffee, a fruit-bearing plant, should be treated differently to all others." The cutting says, "since artificial plantations are made, nature must be aided artificially." Again, another reason given for the absolute decay of the coffee plant in Madagascar is "planted artificially, the care of bringing up the plant was left to nature alone." I have underlined several other passages in the article bearing on the same subject, which if printed in italics will save me quoting farther from it. I need hardly say that I hold the same views as our Madagascar correspondent, and repeat: Coffee cultivation now-a-days is artificial, and must be treated artificially. Did nature intend the plant to be grown in fields 5 x 5 or 6 x 6? Did nature intend that *all* should be taken from the tree, in the shape of fruit, and nothing returned to the soil? (And so on *ad lib.*!)

If Mr. Partridge's friend who visited "some of the coffee estates" (he does not say where) had visited some estates I know of in Mysore, he would have found coffee growing *naturally* to his heart's content! Long, tall, lanky trees, 12 and 15 feet high, never pruned or snickered from the day they were planted. Trees that grew and grew and bore a few berries on their *topmost* branches, then fell over with their own weight, to be replaced by a sucker, which in its turn had to grow and grow to form another tree! True, better crops could be and have been got from such trees by *manuring*, but then here steps in cultivation, which is artificial! Comparing the attention paid to the mango, orange or guava, with that paid to coffee, is like comparing the amount of attention paid to Liberian with that given to Arabica.

Mr. Partridge's crops are no doubt phenomenal, but he must bear in mind his plants are *young*, and it's not every one who can give a basket of cattle-manure to their young plants. If Mr. Partridge's trees *keep on* cropping as they do, and show no signs of becoming *played out*, then, and not till then, I am afraid, will anyone attempt to make an estate "trusting only to nature" for guidance.

It is true, I will not deny, that older planters are somewhat conservative in their ideas, and are chary of accepting new methods; but have they not some cause to be so? After a "sure method" was tried, and had succeeded perhaps so far as it was advocated, it was found that in its very adoption it brought in its train some worse plague. Theories are offered by an authority one day, only to be proved erroneous by a

greater authority the next. For instance: Mr. Graham Anderson in his "Jottings on Coffee and its Culture in Mysore" written *many* years ago, wrote: "With regard to leaf disease I shall assume it to be a pest allied to the Uridinies and therefore suggest that it takes its origin in—or that its development is at least favoured by—a *parasitic soil*" (the *it* are mine) "that its spores are absorbed by the roots and grow in the parenchyma of living plants, and thus pass through the sap vessels to the leaf." Mr. William Pringle springs into the planter's world and is recognized as a "greater authority," Mr. Graham Anderson's theory is proved to be entirely erroneous. "Thus the disease is not constitutional" writes Pringle! (see *P. O.*, page 494, August 14th, 1897) and we abide by this decision and rest convinced that it is the *right* one, but a greater than Mr. Pringle may one day arise! As to which explanation, I hope Mr. Partridge will excuse planter for being somewhat conservative!

CONSERVATIVE.

COFFEE PLANTING IN MADAGASCAR.

In 1871, the late Mr. Alfred Guenot, of Vatomandary, tried large plantations of coffee in Mahanoro District. The plants grew very well, and that gentleman had succeeded in the enterprise he would have certainly been one of the richest man who ever attempted serious planting in Madagascar. Some time after, in 1872-73, a kind of fever passed through the district of Mahanoro, the disease unknown until that time, acted strongly on the brains of the inhabitants, that an epidemic immediately broke out: it was planting coffee; almost every one wished to plant coffee; that plant responded to the desire of the inhabitants and grew luxuriantly; unfortunately this did not last long. What often happens in such cases soon occurred, namely, deceptive appearances, and then disillusion. Coffee had been, it is true, planted on a large scale, but no one provided for the means of maintaining it. *Planted artificially, the care of bringing up the child was left to Nature alone.* In a short space of time the plantations of coffee has been made, but alas! they did not last long; a few years, after a few crops all the plantations had disappeared. All the coffee-trees had died. No one searched for a remedy, or to cover the cause of the disease. All contented themselves with saying "The coffee plantations are destroyed by a disease." Only one planter, Jean Comte, now in Tamatave, was in the habit of *manuring* the coffee trees yearly. Well, he preserved his plantation, and we remember, after the disappearance of the other plantations, having twice accompanied him on his estate situated at Ambodiriana Lohariana and saw the coffee trees in a very fair state of vegetation. When the late war took place Mr. Comte was obliged to leave Mahanoro, his plantation was in full crop while long before there remained only stumps of trees on the estate of the other planters. In our opinion, the coffee-tree was destroyed by a disease which could be summarised by these words: *want of nourishment and elements.* We think that the coffee-tree could be planted and would succeed on the condition that the plantation be *manured yearly, even twice a year if possible.* The soil of this country possesses an incredible degree of fertility, but, by the very fact that the vegetation is so active the soil becomes impoverished quickly. *Since artificial plantations are made, Nature ought also to be aided artificially.* The late M. Alfred Guenot who had lost so much money in planting coffee, was of opinion that coffee ought to be tried again and was preparing to do so, when unfortunately he died. The same sort of coffee as that which was cultivated at the time he died, could, we believe, be planted afresh—the tree is not sick, since on the estates where coffee was planted, it is observed that a few have escaped the disease, undoubtedly, to having been planted in richer veins of soil. In the villages and yards one notices a few coffee-trees growing nicely, probably taking their nutritive principles from the manure formed naturally in those places. It is a good idea to introduce the coffee of Liberia, but it is no reason why the ancient sort should not be planted again. In 1880 the coffee in white shell was worth 3 dols. per 100 lbs.; at the present time, one could hardly, by offering 11 dols. or 12 dols., obtain 100 lbs. of the same produce. Most of the foreign community, if not all, make their money of tea now. We have also observed that coffee flourishes here in places sheltered from winds, and ever so little umbrageous. We believe that coffee plant would do very well as interlineary plantations.—*Madagascar News.*

CENTRAL HOTEL, INFANTRY ROAD, BANGALORE.

(Under English Management.)

The most comfortable and convenient for visitors
TERMS MODERATE.

COFFEE SHADE TREE.

un-dried Erythrina Lithosperma loppings, &c., contain per

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

orders should be booked early for the coming crop of seed from parent trees of above analysis at Rs. 6 per pound containing at 2,000 seeds. Germination guaranteed.

only thornless variety extant, and is not procurable anywhere save in the MANAGER, Arienkow Estate, Shencottah, Tinnevely.

COFFEE.

ains Coffee."

We notice that the success that has attended irrigated coffee-gardens at Bangalore has induced certain wealthy natives to experiment in the same direction near Coimbatore. We commend the idea to Missionary Settlements, as there is no doubt but coffee cultivation on the plains is still in its infancy.

e Hawaiian Crop.

In his annual report, says the *Produce World*, the Hawaiian Minister of Finance estimates that the Hawaiian Coffee Crop for 1896 was 757,552 pounds. There are now upwards of two hundred and fifty plantations or estates devoted to coffee growing in the islands, and there is a fair prospect that the coffee product for the next four years will be doubled each year. If so, the crop of Hawaii for the year 1900 may be easily estimated at twelve million pounds. In the opinion of some sanguine coffee planters, this is a very moderate estimate. But it must be borne in mind that coffee is a very certain crop, and it is safer always to make low estimates.

omed?

P. A. S. I., the *Ceylon Observer* states:—

It is clear from the whole of the discussion that with both leaf disease and green bug to contend with, the end of coffee in India (as in Ceylon) is approaching unless lady birds can be introduced to stop the latter."

We scarcely think this deduction warranted, seeing that the green bug has, as yet, only committed havoc in the Lower Provinces and put in an appearance in the Nelliampathis. Coffee is not doomed yet in Southern India; but he must certainly rally his best men round him and make a stand against his formidable foes. The proceedings of the P. A. S. showed that his supporters have not lost heart at—"mean fight."

om Mysore to the Coast.

Mysore planters in particular should read with interest the paper by "Steam" that is published in our present issue. We invite remarks from men on the spot on the various spots most concerned—as to whether the route "Steam" suggests is as good as he thinks it is. To judge from the map, it is all right; but there may be some objections that the map does not reveal. If there are none, and if Mysore and Coorg planters can come to an understanding as to a route that will be acceptable to both, there will be a very fair prospect of linking both these centres to the Coast, by means of the iron road, within a very short time. The chief desideratum is that there should be an agreement as to what is wanted. Then, all interested

can go ahead in an earnest attempt to get it. To agitate for railway communication between Mysore and the West Coast is one thing; to urge the construction of a line between particular places is quite another matter, and one that can be pressed forward with a greater prospect of success.

London Market.

At the Dutch sale on Tuesday, says the *P. M. Review* of 7th August, there was a fair demand and prices generally were firm. Good ordinary Java sold at about $\frac{1}{2}$ cent over valuations. In this market, when the auctions re-opened on Thursday, there was a better inquiry, and full prices were paid, especially for home trade descriptions. Privately, a moderate business has been done in fine Costa Rica and Mysore at steadily advancing rates. Owing to the small quantity of really fine Coffee this year, prices for these descriptions are hardly likely to give way now, as with the autumn demand, which will probably shortly set in, the few lots offering will most likely be soon cleared off. In the terminal market there has been a further fall, as not only has no confirmation of damage to the next Brazil crop been received, but the daily receipts have been so enormous that no confidence is placed in even the present low prices. The stocks, too, also show such a large increase during July that any upward movement has been further checked. The total visible supply of the world on 1st instant is given at 265,500 tons, an increase of 28,580 tons during July, and of 90,000 tons compared with a year ago.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended July 31, 1897.	Tons. 242	Tons. 257	Tons. 608	Tons. 368	Tons. 13,563	Tons. 10,860
For the 30 weeks ended July 31, 1897.	8,613	8,747	12,703	13,654	...	...

Liberian in North Borneo.

The coffee grown in North Borneo, says a correspondent to the *British North Borneo Herald*, is the Liberian sort. It grows faster and is healthier and larger in North Borneo, as far as I can discover, than in any other country, and it finds a ready sale, the present price being about 64s. per cwt., against 40s. for good Channel Rio (Arabian). The following are the actual crop figures from a 170-acre estate. (A picul is 133 $\frac{1}{2}$ lbs.)

	Pcls.	cts.
Before 24 months old	1	96
Six months 25 to 30 months old	40	02
Six months 31 to 36 months old	130	35
Six months 37 to 42 months old	220	19
Six months 43 to 48 months old	304	13
Three months 51 and 53 months old	359	66

(including this January.)

This is of clean marketable coffee. This estate has not been manured, a significant testimony to the richness of the soil. We have now full particulars of the cost of planting and of upkeeping coffee and can furnish exact estimates. The trees in the photograph are three years and one month old. The amount of land in North Borneo suitable for

coffee is practically unlimited. The cultivation of coffee is being gradually extended, and may be expected to increase still faster. North Borneo is one of the few countries flying the flag that coffee will grow in, and it is on that account to be preferred to the South American Republics with their frequent revolutions, probably entailing the forced enlistment of all the estate labour. While on the subject of coffee, I may mention that the clearing of the forest for an estate is not by any men's the difficulty it is generally supposed to be. The natives are glad to get contracts to fell at four dollars an acre, however large the trees may be, and if felled in the drier weather, after a few days without rain, a burn can be had that will leave the ground almost clear enough to commence holing at once. Labour is obtainable at 30 cents or 7½d. per working day, with no extras of any kinds, the men housing themselves and finding most of their tools. This is free labour which is in increasing supply as demand increases.

TEA.

Indian and Ceylon Crops. The total sailings of tea from Calcutta from the 1st of April to 31st July was only 25,819,064 lbs. against 25,830,714 lbs. in 1896 and 28,761,862 in 1895. The exports of tea from Ceylon from the 1st January were 69,774,083 lbs. against 61 and 52 millions odd in 1895 and 1894 respectively.

Indian Tea Association. In the report of a committee meeting of this Association, dated the 9th August, we note that the contributions to the American Market Fund to date amounted to Rs.91,469. It is interesting to observe that the success that so far attended Dr. Haffkine's inoculations against cholera has led to an expression of opinion by the committee that inoculation should be practised at all the chief recruiting stations. The system will be a voluntary one, and a fee of eight annas levied (payable we suppose by the planter) per head

American demand. Statistics show that of imports of 93,998,372 lbs. tea into the United States in 1896, China contributed 50,916,111 lbs. and Japan 38,552,467 lbs., thus leaving only 4,529,794 lbs. for India and all other countries to supply. It is very evident, therefore, that the attempt of Indian and Ceylon planters to "boom" their teas in the United States is a wise one. There is room for considerable expansion of trade in that direction, and it is to be hoped that every success will attend the efforts of the Indian planter to establish a firm footing in the important American market. May South India acquire a fair share of the trade!

Company profits. In the usual table of figures giving the workings of Indian tea companies are to be found many interesting details omitted in our previous review. The profit in capital for 1896 varied from 1.69 per cent. to 23.43 per cent., while the dividends ran from *nil* to 20 per cent. The average price per lb. varied from 5½d. (profit 12.88 % and dividend 12.0 %, yield 992 lb. per acre) to 12.78d. (profit 19.30 % and dividend 15.0 %, yield 358 lb. per acre). The smallest yield was 233 lb. per acre (in Darjeeling), average price 10.80d., profit

3.53 % and dividend 5 %. The largest yield was 1.03 per acre (in Assam), average price 5.78d., profit 11.26 and dividend 15 %. The profit per mature acre varied £1-3-7 to £11-10-1. The capital cost per acre varied from £19 to £80, the yields being 350 lb. per and 635 lb. respectively. The ratio of expenses to rec varied from 57 % to 92 %.

Prices since 1893.

In their report of 6th ult. Messrs. Gow, Wilson and Sta publish an interesting table of prices obtained by In and Ceylon teas from the year 1893 to the present t We give below an abridged table giving the prices only the sales of the first week in each month:—

	1893		1894		1895		1896		1
	I.	C.	I.	C.	I.	C.	I.	C.	I.
January ..	10½	10¾d.	8	8½	10½	10	8	9	9
February ..	9¾	10½	8¾	8½	10	9¾	9	8½	9¾
March ...	9¾	9½	8½	8½	9½	9	9½	8½	9½
April ...	9½	9	9	8½	11	8¾	8½	8	7
May ...	9½	9½	8¾	8½	9	8½	7¾	8½	7
June ...	10	8	8	7½	8¾	8½	8	7¾	8½
July ...	7¾	7½	8¾	7½	8	7½	9	7½	8½
August ...	9	8½	9¾	8½	8¾	8½	11	7½	11½
September ..	8½	8	10½	9	8½	8½	10½	8	
October ...	9½	9¾	9½	9½	9	9	9½	9	
November ...	9½	9½	10½	10½	8½	9½	8½	8½	
December ...	8½	9½	9½	9½	9½	9½	8½	8½	

Wanted: Inventors!

A correspondent to the Calcutta Planter makes some interesting suggestions *re* the most urgently required improvements in appliances for manufacture and cultivation:—

One of the first necessities is an improved leaf basket which will permit the air to percolate freely through the mass. The thing on a larger scale is required for the leaf carts, which are more deleterious to the leaf than the present style of basket. Doubtless the wide flat basket, now more frequently in vogue, the deep, narrow one, is an improvement in the right direction, it is not wholly satisfactory. Of course, our old friend the Parula Plucker is still as much needed as ever, but the Perfect Parula, alas, is still no nearer to us than it was thirty years ago to all appliances, and no inventor has yet come forward whose conception has been able to pass in speed, cost, and efficiency, the nimble fingers of the coolie women, and this is a strange thing to consider in the latter days when everywhere machinery for the most trivial matters is superseding human labour, however skilful such labour may be. There have been a varied assortment of pluckers, each one purporting to be the ideal one, put into the market at different times, but the fact remains that we are "as we were."

It has been asked if it would not be possible to enhance the beautiful appearance of our teas by preserving the bloom? As a practical planter, I should say, from the nature and system of tea manufacture, that such would be an utter impossibility at present. When manufacture by steam is totally superseded by electricity (it no doubt will be in the not very distant future), then it seems to me that the bloom might possibly be retained but not be lost. Considering that tea bushes are planted in equi-distant lines, it is no matter for surprise that no practical cultivator has yet invented. One would imagine that something on the principle of steam cultivators worked by a wire rope, such as are used by farmers at home, could be applied on a smaller scale to tea land, with a considerable saving of cost, and the work would be performed with a regularity and uniformity not always conspicuous in the cultivation done by hand. I have mentioned a few of our more urgent necessities, and doubtless many more will occur to the mind of others. There is a wide scope for the man with an inventive bent, and a persistent determination to perfect such invention as he contemplates.

I believe the very best thing that could happen to us would be the formation of an American Company to take over some large estate and to develop it by an American establishment. I venture to say that we should not then have to wait long for a variety of mechanical improvements which we should be astonished at not having thought of ourselves.

Home Market.

The market was practically closed until Thursday, says the *P. M. Review* of 7th ultimo, when public sales were held, comprising 3,282 packages. The teas mainly consisted of the medium and finer grades, for which there was brisk competition at hardening rates, while the lower descriptions fetched quite former values. As the supply for the next few weeks will probably not show the increase usually looked for at this period of the season, the market will no doubt maintain the stronger tendency for some time. However, the latest reports state that the damaged portion of the railroad is repaired sufficiently to allow of the free transport of teas from most of the districts, the deficiency in the imports will soon be made up, and a more liberal supply will be forthcoming. The later advices of the outturn are also more satisfactory, the weather generally is reported to be more favourable for the production of better teas, and it is, therefore, probable that the later imports will supply the market with an improved selection from most districts. The returns for the past month are, on the whole, satisfactory, the consumption showing a good increase over July of last year. Imports were 5,815,000 lbs. against 6,311,000 lbs., the deliveries were larger by 1,254,000 lbs., the quantities respectively being 9,491,000 lbs. and 8,237,000 lbs., while the increase in the stock is now reduced to 3,320,000 lbs. The public sales next week will be larger and will be resumed on Monday, and continued on Wednesday and Thursday as formerly.

CEYLON TEAS.—In the absence of public sales, the market for Ceylon Teas has been practically closed and no change can be reported. The first public auction since the holidays will take place on Tuesday next, when very large quantities will be brought forward. This, indeed, will be the largest sale on record for this description of tea. The following are the figures for the past month compared with July last year:—The imports amounted to 10,380,000 lbs., against 10,344,000 lbs., and the deliveries were 8,962,000 lbs. and 8,211,000 lbs., while the stock stands at 24,212,000 lbs., as compared with 23,515,000 lbs.

MANURING—PRUNING—PLUCKING.

AN INDIAN PLANTER, '1874,' writes a very interesting and practical letter to the *Ceylon Observer*. He wishes that the planter in India could copy the 'public spirit' of the planter in Ceylon, and referring to the voluminous correspondence on planting matters that appears in the Colombo papers observes with truth:—

"Of course the grand effect of all those letters is not so much that many planters will be benefitted by advice given, as that they will be set 'thinking,' and something always comes of real serious thought."

As regards prices of tea, too, he takes a view that time will probably prove to be correct, for he remarks that though planters growl about low prices, they have surely to come to lower still. The recent advance in exchange lends additional probability to this forecast.

Then, '1874' gives some useful hints about Manuring. He says:—

About MANURING.—There are two answers as to the object of manuring: The manager will tell you that it is to improve the bushes. The proprietor may say that it is to get a good return for money spent.

And so there will be two ways of using manure: the one, which will

improve bad bushes and take a long time to give any return, and the other to apply manure to the best bushes and get an immediate and maximum return. I would say that if you have Rs.500 to spend on manuring, put it on to the bad bushes, because even a good percentage of profit on Rs.500 would hardly be noticed in the year's accounts; but if you have from Rs.3,000 to Rs.5,000 to spend, then put it on to the best bushes, and it is possible that you will get cent-per-cent profit, and this will make a great show, and encourage you to go in on a large scale.

Strong manures are generally put down in large quantities, and the effects are supposed to last for three years or so. It appears to me that it would be wiser to use one-third the quantity and apply it annually. Then this strong manure is placed at the roots of the bushes with the idea that it will be more readily assimilated; but by digging up the soil near goop bushes, it will be found that the roots are not far from the surface at a distance of 2 feet from the stem; and these are the roots that creep about to find sustenance. So it will be well to distribute the manure all over the surface and dig (or wash) it in to within reach of these roots. Possibly the best method will be to apply the manure with water if available, or broadcast and hob it in; both these methods would cost less than the one of digging a small trench round the bush and covering up the manure.

Manure will be of some benefit when it is looked to as a source of revenue and not as a bush-improver—that is to say that money spent in manuring good tea will probably yield more percentage of profit than the same sum put into opening out new extensions. An estate will spend Rs.10,000 in extensions. I think that the same sum spent in manuring its present tea would pay better.

PRUNING.—I have a fairly wide experience. In Cachar, Assam, and Sylhet pruning is done every year, nearly all the year's growth is cut off, only 2 to 4 inches are left. When the bush grows too tall it is cut back to the manager's fancy—from the ground to 24 inches). In those places you can do as you please with the bushes. In Kangra and up-country districts the tea is allowed to grow, cutting back is resorted to as seldom as possible, heavy pruning is done in June, light pruning in the cold weather, the bush is allowed very little growth. In Chota Nagpur the bushes are pruned every second or third year, and not touched with the knife in between.

PLUCKING.—In Assam, &c., the plucking begins by leaving 2 or 3 leaves on the new shoot, 1 leaf on every subsequent shoot to the end of the year (some few gardens pluck all close down for the last few flushes in October and November)—the consequence is a growth of from 18 inches to 3 feet, and this is all out in December.

In Kangra one leaf only is left on the new shoots after the cold weather pruning and after that each shoot is taken clean off; the growth of the year is about 4 to 6 inches. On hard pruned bushes (pruned in June) they allow 3 leaves of the first flush to remain, and pluck close after that.

In Chota Nagpur 3 leaves are left on the new shoots after pruning, and from that time to the next pruning, every shoot is taken (if possible) as soon as it has two leaves and a bud.

I myself in Sylhet once let a plot of tea remain unpruned for one year, and the second year's growth gave me 1,120lb. of tea per acre—but as that plot gave fully 960lb. per acre even when pruned yearly. it was not worth while adopting the new system, because it would be necessary to prune at the end of the second year and the yield would be less. I think that was the reason, but I now think that it would do tea a lot of good to let it remain unpruned for two years (as you do in Ceylon); the branches would have more time to get strong and thick.

The annual pruning in Assam, &c., does not seem to spoil the quality of the tea; the first picking (i.e., shoots out of wood) is generally inferior to the rest; but it seems to me that Ceylon planters lay too much blame on pruning as a destroyer of quality.

There is one point in favour of annual pruning. The first tipping is bad leaf, the second perhaps not very good; but after that you get good strong sappy leaf, and if this can be taken in time or if overgrown, only 2 leaves and the bud are plucked, you will get the best quality tea your soil can produce.

But with deferred pruning say 2 or 3 years interval, the bushes send out enormous numbers of shoots in flushes. Each bud breaks out and matures at about the same time, so that the labour force can only take them all off in from 10 to 15 days.

At the end of 5 or 6 days the shoots have got four leaves or have become "bhangy" (open); you don't like to leave the extra leaf and then your quality is a thing of the past. At the end of the flush nothing much of value is left—some open shoots and a few that have forced their way through the wood from below this rubbish serves to fill up time till the next flush comes on. I am now speaking of what I imagine to be the fault in Ceylon. In Assam the system of pruning and plucking gives a continuous succession of shoots which are well within the capacity of the labour force to take in good time; but with you the flush would require about three times your force to pick when it is ready, and before it gets too long—and

after that you have hardly enough leaf to earn full pay for your pluckers,—you make huge yields of which about $\frac{1}{4}$ is taken in good time and the rest is overgrown flush and odds and ends. But still you manage to pay good dividends and so your methods are justified. Success is always capable of justification, and it is only when one fails that one enquires after other tracks to run on. Suppose that some of you try the Assam method of annual pruning—take only good leaf—and manufacture it carefully. This may lead to a small reduction in quantity and improvement in quality.

NATURE SLOWLY MAKES READY.

You have probably never seen a volcano in eruption. It is a magnificent spectacle. Where do all those torrents of red-hot lava come from? Nobody can tell, except that they come from somewhere down deep in the earth. But one thing we know, namely, that eruptions of any one volcano are far apart. Between whiles Nature is getting ready for them; she is preparing for the tremendous demonstration.

Just so it is with all her processes. In the cold of winter she is arranging the forces which are to make the heat and the harvests of the following summer, and so on.

From May, 1890, to February 1892, is a period of twenty-one months. The two dates will long remain clear in the mind of Mrs. Martha Bowles, of 182, Llangyfelach Road, Morriston, near Swansea. For the first was the beginning and the second the ending of an experience which was bad enough in itself, yet only the introduction to something vastly worse. It was like the time of getting ready for a great trouble to come.

Her first sense of this was indefinite and vague, like the low muttering of thunder below the horizon while the skies are yet clear. She expresses it thus, in the very words most of us use on similar occasions, "I felt that something was wrong with me—something hanging over me."

Ah! dear me. How often we think such feelings are a warning sent to the spirit, when in fact they are caused entirely by the condition of our bodies. She felt heavy, languid and tired, and mentally depressed. This was not only melancholy to her but new, as she had always been strong and healthy. Then came the discomforts which there could be no mistake about. They are common enough to be sure. Oh, yes. But isn't that all the more a reason why we should understand what they mean? "Certainly," you will say.

Well, then, there was that bad, offensive taste in the mouth, that so many of us have had; the failure of the appetite, and the pain in the chest and sides after eating. The worst pain was in the right side, where it was very heavy. That pointed to the liver, which is located on that side; and when anything ails the liver it is as though the big water-wheel of a mill had got fixed so as not to turn round. For the liver does half a dozen kinds of work, and when it strikes work, the rest of the organs take a sort of rainy holiday.

Presently her skin and the white of her eyes turned yellow, as autumn leaves. That meant bile in the blood; the liver was off its duty; that is a sure sign. The kidney secretion was the colour of blood instead of a clear amber, which meant that the trouble had already reached those important organs. Then the stomach was upset and refused to take kindly to food—as though the miller sent your grain back, declining to grind it. She vomited a sour, bitter fluid, which was acid bile, away out of its proper track. On and on along this line, constantly getting further and further from the happy land of health; this was the history of those twenty-one months—all bad enough, yet all preparatory for worse ones.

"One day in February, 1892," she says in her letter of August 18th, 1893, "I began to have dreadful pain and cramp. It began in the right side, and extended across the stomach. For hours together I was in the greatest agony. What I suffered is past description. When the pain eased a little, I was cold as death and shivered until the bed shook under me. I had hot iron plates supplied to my feet, and held hot irons in my hands, but nothing gave me much relief. My stomach was so irritable that I could keep no food on it. I was now confined to my bed, and the doctor attending me said I was passing gall stones. He wanted me to go to Swansea Hospital and be operated upon, but I was afraid I might not live through it."

"I next had two other doctors at Morriston and also three from Swansea, who all gave me medicines, and said nothing more could be done for me. For six months I lay in bed undergoing the greatest agony; never free from pain more than two or three hours

at a time. During the whole of this time I was fed on nothing but and water. I had scarcely any life or strength left in me. As I saw me said I never could by any chance get better in this way."

"I lingered on like this until August, 1892, when my daughter brought me a book telling of Mother Seigel's Curative Syrup. In this book she read of a case like mine having been cured by the medicine. My husband got a bottle from Mr. Bevan, the chemist, and after taking a few doses I felt a little relief. I kept on taking it and soon the pains left me, my appetite returned, and I agreed with me. After taking the Syrup for three months I was a new creature and strong as ever. I can now eat anything and nothing disagrees with me. After I was well our minister of religion said: 'Mrs. Bowles, I never thought to see you alive.' 'Mother Seigel's Syrup saved my life.' You may publish my story, and I will gladly answer inquiries. (Signed) Martha Bowles."

This case—one of acute indigestion and dyspepsia, with liver and kidney complaints—is well known in the district. The husband is a gardener, well known and respected.

Do we need to point out the moral of this wonderful cure? You can see it for yourself.

COLLINGWOOD & CO.,

PHARMACISTS & MANUFACTURING CHEMISTS,
MOUNT ROAD, MADRAS,

BEG to inform all Planters that they are prepared to supply pure Drugs, Pharmaceutical Preparations, Soaps, Perfumery, Toilet Requisites, Patent and Proprietary Articles, Surgical and Scientific Instruments, at very moderate prices, and recent importations from the "Leading Houses of Great Britain."

"Save 25 per cent. of your income by purchasing from"

CYCLE EXHIBITION.

THE OAKLEY CYCLE CO.'S DEPOSITORY

St. Mark's Road, South Parade

CYCLES ON SHOW AND FOR SALE

MAKE.	Model.	Tyres.	Price net cash.	Gear.	Weight.
GENTLEMEN'S					
Ramblers (American):	No. 15	G. & J. pneumatic	400	72	
Premier	S.	D. T. pneumatic.	315	66	
Premier	R.	Do.	300	74	
Royal Eagle	No. 4	Do.	279	60	
Scarsdale	No. 1	G. & J. pneumatic.	250	60	
Oakley	No. 1	Warwick.	250	60	
Swift	Popular	Cushion.	275	60	
Premier	S.	Do.	275	63	
Premier	R.	Do.	260	66	
Scarsdale	No. 2	Do.	175	56	
Oakley	No. 3	Do.	140	60	
LADIES'					
Singers	de Luxe	D. T. pneumatic.	425	56	
Premier	H.	Do.	315	56	
Rudge Whitworth	Standard	Do.	315	56	
Oakley	No. 1	Cushion.	225	56	
Scarsdale	No. 2	Do.	175	56	

MARKET SUPPLEMENT.

SATURDAY, SEPTEMBER 4, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (August 13, 1897) says:—The supplies at Public Sales this week have been on a small scale, and a good demand prevailing the market has advanced fully 1/- for nearly every description.

Over 1,200 bags East Indian were offered and attracted keen competition, prices showing a rise of 1/- to 2/- since our last.

The small supplies of Central American brought forward realised full prices and the greyish qualities of Guatemala are fully 1/- dearer.

Futures during the early part of the week advanced 1/3, on rather smaller receipts and firm cost and freight offers, but the receipts increasing again, quotations have dropped back 9d. from the best.

Messrs. Wm. Jas. and Hy. Thompson (into which firm Patry and Pasteur united, have now been absorbed) issue the following Report of the Colonial Markets for the fortnight ending August 11th, 1897:—Bank rate 2 1/2%. Bombay Exchange closes at 1s 3 1/2d. Brazil Exchange 7 3/4d. Rupee per 3 1/2% 63 1/2. Silver 25 1/2d per oz.

A steady demand has prevailed since our last Report. The moderate supply catalogued has been mostly sold at fully previous values to an advance of 1s to 2s per cwt. The sales included:—51 casks and tierces of barrels and bags Plantation Ceylon sold at 84s to 110s 6d. Of 238 bags East India, 547 bags Coorg sold from 70s 6d to 106s, 85 bags Sidoobatum were brought in, 596 bags Neilgherry good part sold at 6s 6d to 96s, and 10 bags Wynaad sold at 80s; 9 barrels, 40 bags Jamaica partly sold at 70s to 82s; 948 bags Costa Rica good part sold at 55s to 65s 6d; 2,687 bags Guatemala chiefly sold at 60s to 90s; 852 bags Salvador sold at 51s 6d to 56s 6d; 1,904 bags Nicaragua sold at 50s to 65s; 735 bags Vera Paz and Coban part sold at 96s to 108s; 29 bags Mexican sold at 65s to 93s 6d; 121 half-bales Mocha bought in; 17 bags Liberian Wynaad bought in, and 420 bags Santos on quay terms were bought in.

According to Messrs. Duuring and Zoon, the European stocks on 1st July, showed a reduction of 9,550 tons, and the visible supply an increase of 27,700 tons, being estimated at 132,200 tons and 266,240 tons, respectively, against 141,750 tons and 238,540 tons on 1st July.

The Dutch Sale which was held on the 3rd inst. comprised 19,162 bags of 2 cases, and went off with some irregularity, good ordinary Java selling at the valuation of 47 cents, against 46 1/2 cents in the June sale.

Daily receipts have averaged 17,214 bags in Rio, and 29,143 bags in Santos.

Futures have been quiet and show but little change, viz.:—Good average Santos in Havre, September delivery, fcs. 44.75, in Hamburg 37, and No. 7 low ordinary Rio in New York \$6.90.

To-day's London official quotations are:—

	Aug.	Sept.	Dec.	March	May
Rio	34/-	34/6	35/-	—	—
SANTOS	36/-	36/3	37/-	37/6	37/9

We quote:—

Ceylon, mid. to good mid.	100/ @ 106/	Costa Rica, mid. to fine...	83/ @ 109/
Do. small to low mid.	81/ „ 99/	Do. ord. to low middling.	60/ „ 82/
East India, mid. to good	mid .. 89/ „ 103/	Jamaica, good to fine ord.	52/ „ 66/
Do. small to low mid.	75/ „ 88/	Do. greenish to fine	colory... 74/ „ 120/
Guatemala, mid. to fine...	76/ „ 102/	African	... 30/ „ 32/
Do. good ord. to low	mid .. 60/ „ 75/	Columbian, ordinary	... 50/ „ 55/
Salvador, good ord. foxy	greenish... 58/ „ 59/	Do. good ord. to	low mid... 56/ „ 77/
		Do. mid. to fine...	78/ „ 98/

Receipts in Brazil compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
RIO	535,000	458,000	285,000
SANTOS	895,000	683,000	371,000
	1,430,000	1,141,000	656,000

Prices realized at auction for the principal Marks of East India:—

	1	2	3	PB	T
Matheson's					
Coorg	105/6	92/6	71/-	111/-	69/6
Polli Cadoo					
—	106/-	91/6	72/6	111/6	68/6
Home					
—	105/-	90/6	73/-	110/-	69/-
Hanchi Betta					
—	72/-	72/-	66/-	79/-	55/6
Cherry					54/-
Matheson's					
Coorg	—	70/6	64/-	80/-	51/6
Cherry					

NEILGHERRY.

	A	B	C	PB	T
JM					
Droog Estate	96/-	87/-	72/-	91/-	61/6
Neilgherry					
Athuir	95/6	86/6	72/6	95/-	56/6

Landed last week ... 359 tons. Deliveries ... 635 tons. Stock ... 13,287 tons.
Do. last year ... 399 „ „ „ 441 „ „ „ 10,818 „

TEA.

Messrs. Gov. Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated August 13th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	111,509 packages.	281,052 packages.	10,135 packages.
1896-1897...	111,284 „	262,362 „	11,980 „
21,883 pkgs. INDIAN			
42,195 „ CEYLON			
1,539 „ JAVA			
Total 65,617 packages were offered in public auction this week.			

The following table shows that the amount of British Grown Tea taken for Home Consumption and Export has more than kept pace with the increased supplies which have so far come to hand this year:—

SUPPLEMENT TO "PLANTING OPINION."

Movements of Tea in United Kingdom from 1st Jan. to 31st July, as shown by Custom House Returns.

	IMPORTS.			HOME CONSUMPTION.			EXPORTS.		
	1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.	1895.
BRITISH E. INDIES	40,221,343	35,155,965	36,482,496	71,852,593	70,162,579	64,062,594	3,022,638	1,856,770	2,100,000
CEYLON	63,195,354	60,815,960	53,730,120	48,223,876	44,883,290	42,875,335	6,065,701	4,512,202	3,000,000
CHINA	11,110,369	12,906,917	17,646,697	10,452,219	11,228,204	16,789,384	12,261,358	10,398,289	10,000,000
OTHER COUNTRIES	4,316,269	5,292,979	4,602,824	2,126,748	2,751,194	3,483,403	598,518	639,221	1,000,000
TOTAL lbs.	118,843,335	114,171,821	112,465,137	132,655,436	129,025,267	127,210,716	21,948,215	17,406,482	16,000,000

Indian. The market is broadening out and prices show a further all-round improvement during the week. Most of the Assam Teas continue to show very satisfactory quality. The following averages are worthy of note:—"Suddia Road T Co." 1/10½; "Jokai T Co. Hathiali," 1/6½; "Doom Dooma Co. Hansura," 1/5½; "Eastern Assam Co. B." 1/5½; "Lebong T Co. Tukvar" and "Makum T Co." 1/4; "Darjeeling Con. T Co. Gyabaree," 1/4½.

Week's av. of Tea sold on Garden Account, 1897, 16,546 pkgs., av. 10d. 1896, 26,905 pkgs., av. 10d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	7,995 p 1/-	12,919 p 7½	11½ 23,597 p 11	28,046 p 11
Cachar and Sylhet	2,171 p 7½	7,387 p 7½	14,728 p 6½	19,794 p 7½
Chittagong	—	250	7½ 211 p 3½	172 5
Chota Nagpore	—	67	5½ —	250 7½
Darjeeling	1,498 p 10	1,787 p 1	10,220 p 9½	7,879 p 11½
Dooars	2,298 p 8	4,105 7½	8,227 p 7½	7,287 p 8½
Kangra, &c.	420 p 7½	151 p 6	1,053 p 6½	1,009 p 6½
Neilgherry	174 7½	—	962 p 6½	503 p 6½
Teral	643 p 8½	239 p 7½	249 8½	304 p 7½
Travancore	1,347 p 6	—	8,169 p 6½	5,373 p 7½

Total sold on Garden Account 1st June to date 1897, 67,916 pkgs., av. 8½d. 1896, 70,317 pkgs., av. 9½d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894
DUST. (Fair ordinary, dark liquor)	3½d	4½d	4½d	4d
FANNINGS. (Red to brown, strong rough liquor)	4½d	5d	4½d	4½d
BROKEN TEA. (Brownish to blackish, strong liquor)	6½d	7½d	6d	6½d

	1897.	1896.	1895.
PEK. SOUG. (Blackish greyish, useful liquor).	7d	8d	7d
PEKOE. (Greyish to blackish, some tip, useful liquor)	8½d	9d	8d
PEK. SOUG. (Blackish greyish, inferior liquor).	5½d	5½d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor)	6d	6d	6d

Ceylon. The record sale of 42,195 packages attracted buyers, quality was a trifle better competition was strong. The large were sold on Tuesday, and the small breaks on Wednesday. The following averages may be mentioned:—"Ingestre," 1/3½; "Ormidale," "Holmwood," 1/1½; "Newera Eliya T Co. Concordia," 1/0½; "T Co. Goatfell," "Standard T Co. St. Leonards," "Mahagastot," "Sutton," 1/-.

Average for week rather under 7½d., against 8d. last year.

Ceylon Tea sold on Garden Account 1st January to date 698,709 pkgs., av. 7½d. 1896, 642,102 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London

	1897.	1896.	1895.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6½d	6½d	6½d
PEKOE (Ordinary leaf, little twist; fair liquor)	7½d	7½d	7½d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5d	5½d	5d
PEKOE (Somewhat bold leaf; indifferent liquor)	5½d	6d	6d

Java. Two attractive invoices from the Perbawattee Estate and the Panoembangan Teas showed useful quality.

Bank rate 2 per cent. Exchange on London three months Calcutta 1/3½ Colombo 1/3½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 10d.) August 13th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fanning and Va
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity
Neilgherry	174 p	7½											
Glendale	93½c	8	33½c	8½			60½c	7½					
Pykara Falls	60 p	6½			24½c	7	20½c	6½	16	6			
Tudor Hall	21½c	9½					21½c	9½					
Travancore	1347 p	6											
Aneimudi	249½c	7½	3½c	8	64½c	7	124½c	5½8	50½c	6			8½c
BA	5 p	4									4	4 4½	1½c
Bonaccord	287 p	6	83	6½7½	116	5½6½			70	5 5½	6	4½	12 p
Braemore	134 p	5½	83½c	6½	31	5½					5	4½	15 p
Elderslie	70	5½			32	5	28	6½	10	4½			
Glenmore	150½c	5			93½c	4 4½	55½c	6½			1½c	2½	1½c
Goatfell	22	5			22	5							
Isfield T Co	20	6			20	6							
Merchiston	42 p	6	12½c	7½	16	6	4½c	7			9	4½5½	1
P	21	4									21	2½4½	
Poonmudi	237 p	5½	34	7	88	6			79	5½			36½c
STTCo Venture	110	7	28	8	50	6½	32	7½					

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

[No. 24.]

COONOOR, SATURDAY, SEPTEMBER 11, 1897.

[No. 24.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 17th September 1897.

Central

Travancore.

4th September.—*Weather.*—Rainfall for August, 52.88. Heaviest August on record, with exception of August 1883. Rainfall for year to date, 170.87. *Crops.*—Tea not flushing much just now, but will be doing so soon if weather keeps fine. *Labour.*—Fairly plentiful. *General Remarks.*—Roads in a dreadful state. Great difficulty in getting cartmen to come up the ghât in consequence.

S. E. Wynaad.

PUNDALURE, 8th September.—*Weather.*—Since my last report there is no change in the weather; we have had constant rains, and at intervals we have had sunshine. On Sunday, the 5th instant, we had the heaviest showers of rain followed by thunder and lightning. To-day the weather is very clear and hot, and the monsoon seems to have left us. *Crop.*—Coffee ripening here and there; transplanting of paddy is nearly finished. Price of grain still very high. *Plant-disease.*—Leaf-disease showing slightly here and there; if the weather continues, the disease will disappear. *Health.*—Very good, and the aborigines are fully engaged in celebrating Onum feast to-day. *Labour.*—Sufficient.

Coorg.

POLLI BETTA, 8th September.—*Weather.*—Showery with plenty of sunshine. Several rainless days. Yesterday there was surprisingly heavy rain, over one inch. The weather would be ideal weather if it were seasonable, but this it is not. It is continuing too wet for the time of year; and it would not be at all surprising if it brought on a virulent attack of leaf-disease. *Plant Diseases.*—Leaf rot to be noticed in all situations, but not prevalent to an alarming degree. On the whole coffee is looking exceedingly fine; but there are trees to be met with in spots which are very sick with leaf disease. *Labour.*—There has not been any large addition to the labour supply. Coolies are, however, dropping in, and there are enough for present requirements.

Nilgiris.

SHOLUR, 8th September.—Very much as last report; rain incessant, and work almost come to a close; out-door work only carried on by robust coolies, and the best of hoeing being only transplanting. Rainfall for September 2.25, being 44.97 to date. *Health.*—Good. *Grains.*—Rates slightly cheaper. *Labour.*—Plentiful.

COONOR, 8th September.—*Weather*.—Still this everlasting drizzle and rain. North-east winds beginning to blow strongly, and N. E. Monsoon not so very far off. *Crops*.—Much the same as last report. Grain dearer than ever. Horse-gram at horrid rates. *Plant-diseases*.—Comparatively absent, though flashworm in tea is almost as strong as ever. A good ten to fifteen per cent. loss in crop this wretched little worm has caused. *General Health*.—Indifferent. *Labour*.—Ample enough as usual. *Interesting Items*.—Referring to high price of horse food, have any of my brother correspondents tried feeding regularly with oats? Put in pounds of dry grain, what is a fair equivalent?

ROADS AND COMMUNICATIONS.

YEAR after year, this subject has been brought up for the consideration of the U. P. A. S. I. No direct or indirect benefit appears to have resulted, yet the matter is one of extreme importance. The present, certainly, is not a very favourable opportunity for pressing it upon the notice of the Governments concerned. Nevertheless, we are of opinion that planters might gain something by making their wants known through the medium of the Press, as well as that of the U. P. A. S. I. We invite all Honorary Secretaries of District Planting Associations, therefore, to lay before us brief statements of local necessities and requirements in the way of railroads, roads and communications. We undertake to make these wants known. If a concise statement of "objects and reasons," and "arguments in support," is sent in every case, so much the better. Whenever a road is obviously needed, we will not merely refer to it once, but will reiterate the demand for its construction until a definite answer shall have been elicited from the authorities. There may be rivalry between different districts, or several may put forward claims all involving a drain on the same coffers. Consequently it would be well for each Association to put forward its claims soon. In some instances, work might be aided by the still-prevalent distress; in most, we fear, the tightness of money would act as a bar to progress. A trial would do no harm, however; and if planters will enable us to make known what new communications are absolutely indispensable to the development of planting districts, and what others are very desirable, we shall hope to see some little result from the co-operation of our little mouse with the U. P. A. S. I. lion.

With every statement of requirements, a synopsis of previous correspondence (if any) with district authorities or Government should be sent.

GENERAL NOTES AND ARTICLES.

Para rubber, Cocoa and Liberian.

Says a Ceylon correspondent from Kandy:—

"People are talking a lot about this para rubber, and I hear of some being planted. We have a hundred plants or so doing very well. I also hear of Liberian coffee being cut out as a failure. The cocoa ground here looks good enough for anything and carries a fair crop,

but parts are being planted up in tea, which does not look paying concern."

Rhea.

In a recent letter to the Agricultural Society of India, Calcutta, the Secretary of the Rhea Fibre Treatment Co. has made some interesting remarks on the prospects of the trade. A misunderstanding evidently occurred over the market prices, the price of £7 per ton at port of shipment being the reality for the bark ribbons (*i.e.* simply peeled from stem and dried) and not the cleaned fibre. If the scrubbing and cleansing of the ribbons is attempted, the price goes up to £30 ton in order to secure a fair profit. The explanation is, therefore, extremely important. The essential required by the R. F. T. Co. is that the ribbons should be thoroughly dried in order to prevent fermentation on the voyage.

Bat Guano.

A valued scientific correspondent writes from Calcutta:—

"You have recently had occasion to quote Bat Guano as a manure. The following is an analysis made lately by M. Jules, Paris:—

Water	...	...	18.02
* Organic matter	...	...	29.11
† Ash	...	...	52.87
			100.00
* Containing nitrogen	...	...	2.99
† Containing potash	...	...	1.09
lime	...	...	7.11
phosphoric acid	...	...	10.93
silica	...	...	23.61

Except for the phosphoric acid, it is rather a poor fertilising agent.

Is it not possible, however, that, as in bird guano, there are two varieties of bat guano, *i.e.*, the fresh or nitrogenous kind, and the old or phosphatic one?

In their Monthly Circular, dated from London, August, 1897, Messrs. Arbutnot and Co. report:—

Cinchona bark.

On 15th July, Public Sales were held at Amsterdam, when 5,294 Packages Java were offered against 4,343 Packages in June and 5,834 Packages in May. A strong demand prevailed and all went at a slight advance, the value of the unit being 4.30 cents against 4.20 in June. On 20th July, Public Sales were held in London, and only 1,000 Packages of all descriptions were offered, against 2,528 Packages in June. There was good competition and the bulk sold at an average of 1.5d. per lb. being steady. The next auctions in London will be on the 17th instant and in Holland on 26th instant, for which 6,102 Packages are advertised. The Quinine market has been firm and prices a spot are slightly dearer. Some business was reported in German Quinine, but there are no further sellers at the price. The Stock of Quinine in London on 31st July was 86,962 lbs. against 104,725 lbs. last year and 138,595 lbs. in 1895.

Shipments from Ceylon 1st January to 1st July lbs.	1897	1896
	384,000 lbs	610,547 lbs.
Shipments from Java 1st January to 31st July lbs.	1897	1896
	4,308,000	5,050,000
Imports 1st January to 31st July Packages	7,925 Pkgs.	12,638 Pkgs.
Deliveries	9,545	16,046
Stocks 31st July	20,572	24,340

Regulation of moisture.

The importance of so regulating the amount of moisture in the soil that the crops sown therein have their proper quantum, has been insisted upon so many times in this paper. Of course the rainfall itself cannot be regulated, but once it has fallen, the soil can be so treated by cultivation and drainage as to remove excess of moisture if present, or keep it from being wasted, if insufficient.

in some of these remarks we may be travelling over old ground, but let the importance of the subject excuse us.

There is a popular error that land sheltered from the wind by a crop is kept moister than uncropped land. This is, of course, no doubt, arisen from the fact that, owing to the wind and shades, the surface soil is damper. But let us get to the facts.

All root plant food is absorbed in solution, *i.e.*, by pump-action, drawing up water from the soil impregnated with chemicals, and evaporating the water by its leaves and leaving the chemicals in its tissues. Thus in dry weather every need of the crop is robbing the rightful owner of the soil of its moisture, and thus also of its food.

Another interesting point is the effect of manure on plant-growth in times of drought. The more saturated the soil is with chemicals, obviously the less moisture is required to gain a given amount of plant food. As for every pound of additional matter to its weight, a plant has to evaporate from 250 to 300 lbs. of water through its leaves, the matter is well worth attention. An obvious conclusion is the great need of keeping our crops, coffee and other, fully supplied with plant food in the dry season.

Besides leaf evaporation, there is the question of surface evaporation from the soil itself. In a dry season every drop of water that escapes from the surface soil is so much lost to the feeding powers of the plant. Soil evaporation proceeds by capillary action, and subsoil moisture ascends to the surface in the same way that a saucer of water will open the whole contents of a flower-pot of earth placed on blotting paper, or as water or ink runs up blotting paper. That is, water runs up minute canals called capillary tubes.

To know the cause is to know the cure. Take our flower-pot again, or, rather, take two. Fill both with "stirred" soil and place in saucers of water. Stir up the surface of one pot with a stick to the depth of one inch. In the other be. In a short time the untouched one will be moist to the very surface, and evaporation will take place. The surface of the other will keep quite dry, though just below the layer of loose soil the earth will be wet. In both the greater portion of the water will have been absorbed. Give each an equal quantity of added water at regular intervals and note how quickly will the water under the stirred pot be overflowing, while that of the other is comparatively empty. The experiment will be very striking if both pots are placed in a very hot atmosphere, and the surface of the one pot is stirred at each addition of water.

What has been done? The tops of the canals or capillary tubes have been blocked up by the fine particles of the earth. What has been done with the flower pot can be surely done in the field by light forking or digging an inch or so in depth. Better still, as lately recommended, a light two-man rake cultivator could be used with better results at a less cost on all but very steep or stony soil.

SOOTY MOLD ON ORANGE TREES"—LESSONS FOR PLANTERS.

MR. E. E. GREEN writes from Eton, Pundaluoya, on the 10th August, as follows, to the *Ceylon Observer* :—
Thanks for the paper (Bulletin No. 13, U. S., Department of Agri-

culture) on the "Sooty Mold of the Orange and its Treatment." It has a certain amount of interest to us—as it deals with the black fungus that follows an attack of "bug," and its effect upon the plant. The following points may be noticed :—

1. The author confirms other observers in the opinion that the fungus is quite superficial, vegetating solely on the "honeydew" excreted by the insects.

2. Injury is, however, found to occur through interference with the process of photosynthesis (the elaboration of carbon compounds under the influence of light). This fact has been demonstrated by Bütschli:—"He removed the fungous membrane from a small portion of a leaf and exposed the leaf to the sun. In the evening, after a sunny day, the leaf was plucked and the chlorophyll extracted with alcohol. After this the leaf was treated with iodine, and the parts from which the membrane had been removed in every case stained a dense blue, indicating the formation of an abundance of starch, while the surrounding portions of the leaf which were protected from the sun by the fungous membrane remained entirely uncoloured, showing that no starch was formed." This has a direct bearing upon the practice of growing tea under old coffee. When the latter is infected with "scalebug," the "honeydew" and accompanying sooty fungus will be communicated to the tea leaves below, and though not actually penetrating their tissues, will interfere with their proper function.

The author includes "blighted and shrivelled leaves, and small and dry fruit" in his account of injury due to "sooty mold." But the larger part of this account is surely attributable to the attacks of the insects that precede the fungus.

In treating of remedial measures also, the author writes as if the "sooty mold" were the main disease, instead of being one of the consequences of a more serious malady. He evidently understands the facts himself, as his proposed remedies are insecticides and directed against the insects; but the case might have been made more clear to the general reader. Such expressions as,—"the treatment of sooty mold by fumigation with hydrocyanic gas"—"kerosene emulsion, which has been recommended for sooty mold"—"resin wash for sooty mold," &c., &c.—are most misleading.

FRUIT CULTURE.

THE Department of Agriculture of Cape Colony has lately issued an excellent Manual of Practical Orchard Work, of which the following are excerpts :—

I.

THE ARTIFICIAL CHARACTER OF MODERN FRUIT TREES.

1. Cultivation implies, first, a previous knowledge of the nature and constitution of the living being we propose to care for, and secondly, a previous knowledge of the soil and atmosphere in which it holds its dual life. It is only by such pre-knowledge that the cultivator can suit the conditions of growth to the wants of the thing to be grown, and thus place it in the best possible position for fulfilling the history of its life. Nothing short of this work, done of set purpose and as the outcome of exact knowledge, can be called *cultivation*.

2. But it is something more than this. It is not enough to reproduce plants in the precise form in which they exist in nature. Firstly, the cultivator, for his own benefit, aims at guiding and controlling the growth of certain plants so as to make them develop very differently from their normal original condition. Thus in one plant he endeavours to obtain seeds of large size and bland taste, in another the effort is to do away with seeds as far as possible and produce a large succulent fruit, in others, shortening of the axial growth, and great enlargement of the leaves is aimed at. The plant then with certain limits is, like clay in the hands of the potter, capable of being remodelled, by causing this or that organ to take on an excessive and unusual development, without at the same time interfering with the balance of functions necessary for its general health. This complex art is one great part of *cultivation*. To practice it with success obviously demands something more than the loose, popular notions of plant-life, which are picked up without special study or thought, or come by imitating the traditional methods of our neighbours.

3. Secondly.—For many hundreds of years a close watch has been kept upon the seedlings arising in the reproduction of all cultivated plants. Whenever a sport or other chance variation has appeared, presenting characters of a desirable kind, the gardener has quickly to detect it, and to give it permanence by such methods as budding and grafting which are unfortunately almost unknown in Ceylon. And this continual watchfulness, awaiting the chance of betterment by natural variation has produced the kinds of fruits approved and cultivated all over the world, so that in fruit culture as with all knowledge, we are to-day the heirs of countless benefactors who have preceded us and handed down to us their best results. It must, therefore, be always borne in mind that the objects of our culture are distinctly artificial products obtained by centuries of selection and variation, and do not exist as natural forms of vegetation, nor can they put up with the conditions that suffice for the latter. As soon as skilled care ceases they cannot escape deterioration and ultimately dying out. And this indispensable skilled care is orchard work of fruit culture—a special branch of cultivation which requires a special knowledge of principles and practice.

(To be continued.)

PRODUCTS OF THE CITRUS TRIBE IN SICILY.

REPORTING on the trade of Sicily, Mr. E. M. de Garston gives some interesting facts connected with the staple products, such as essence of Lemon and other produce of the Citrus family, the different trades dealing in these being of a very interesting character. The Lemon essence industry is a very important one in Sicily, where the abundance of raw material naturally renders the manufacture of the so-called oils of Lemon and Orange a very profitable undertaking; 37,941 kilos. of these essential oils were shipped during the year 1895, over 32,000 kilos. of which was taken by Great Britain.

Oil or essence of Lemon is obtained by pressing or bursting the oil-glands in the rind of the fruit, and this is done either by hand or by machinery; that obtained by the first process being by far the best in quality. In Palermo the essence is all pressed at night. The workmen are supplied with a certain quantity of rinds, divided into equal portions to each between so many gangs, each under the supervision of a foreman. Each man holds two sponges between the fingers of the left hand, and works the rind about in the best way to fracture the oil-vessels. This is caught in the sponges, which, when sufficiently charged with oil, are squeezed into an earthenware receiver; a considerable proportion of the product thus obtained consists of ordinary Lemon-juice left adhering to the rind, together with more or less of the Lemon-pulp. This, however being heavier than the essence, sinks to the bottom of the receptacle, and the essence remains on the top. As the first of these receivers becomes full, the workman blows the floating oil into the second jar through a species of channel formed in the side of the first, and when no more of the essential oil is transferable by blowing, the remaining essence which may yet be floating in the original receiver is carefully absorbed with a sponge, and thence squeezed into the second receptacle, which only contains pure essence.

The remainder, namely, the essential oil which may still have been left in the rinds, is by some manufacturers extracted by distillation, and forms a second quality of essence. By others, again, it is expressed by subjecting the partially exhausted rinds to mechanical pressure in bags. To ascertain, however, if the obtainable essence has been thoroughly squeezed out by the original hand process, the rinds are tested by a foreman, who presses the supposed exhausted peel into the flame of a candle, when, if any combustion is visible, it shows that the pressers have not done their work properly. The essence obtained by the foregoing process undergoes no further manipulation beyond being collected, and after careful filtration through filter-paper it is ready for shipment in the usual coppers of 100,

50, 25, 12, 5, and 2lb. each. When freshly expressed it has a delicious smell of the fruit, which is greatly injured by distillation.

From the leaves, flowers, and fruits of the several species of the Citrus genus a large variety of products are obtained. The blossoms in their natural state serve to flavor drinks and sweetmeats. When distilled they yield two much esteemed products, namely, orange flower-water and essential oil known as Neroli. Moreover, when candied they form a delicious sweet, much in vogue in some regions of Sicily. The orange flower-water is made of equal portions in weight of blossom and water, which yield on an average about one-fifth of the combined weight of water and flowers. Notwithstanding the abundance and excellent quality of the raw material, to speak, still the best manufactories of orange flower-water are to be found outside Italy. As to candied sweetmeats made out of the blossoms, it is doubtless more wholesome as well as more palatable than many other productions of the confectioner's art. The flowers in the first place are selected with care, weighed, immersed in cold water for twenty-four hours, which they are dipped simply in cold water, rewashed in clean water, and finally spread out on a linen cloth or sheet to dry. When completely dry, they are laid out in low, wide dishes, the flower separate from its fellow, and are then sprinkled with sugar, double their weight in sugar, administered at intervals of a period of eight days or thereabouts. Moreover, during the same period the flowers should be frequently moved about in the shade; at the expiration of this time they are once more placed in the sun, whose rays dry them completely.

The raw juices of all the different varieties of the species of Citrus, except that of the Bergamot, are available for commerce; but the juice of the Lemon is the more highly valued on account of the greater amount of acidity it contains. The raw juice, "Agro-crudo," however rich in acid principle, can never vie in this respect with the same juice in a concentrated form with the "Agro-cotto," in which form it is besides a great superiority over uncondensed juice in durability and in reduction of volume. This concentrated juice is prepared in the following manner. It is first of all clarified by being left to stand, then boiled in large cauldrons of copper, one-third full, and the boiling liquid frequently stirred with an iron rod having its head wrapped in common cloth or in rags which have thus to keep the bottom of the cauldron clear of all sediment; those necessary additions to the liquid which the constant evaporation of the aqueous principle renders expedient are supplied by smaller supplementary vessels in which the liquid is kept sufficiently hot to hinder any interruption in the ebullition of the juice contained in the vessels. When the required density is obtained, a point which is easily ascertained through the medium of the citrometer, is poured into vats to cool, and finally drawn off through ordinary funnels into casks.

The adulteration of the acid or juice is facilitated by the ready absorption of certain well-known and easily-obtainable substances, which increase the weight of the acid-juice concentrated. The most commonly employed substances for this purpose of adulteration are tartaric acid, chloride of lime, and sulphuric acid. The methods employed in Sicily to detect the cheat, if not so scientific and perhaps less accurate than those in use in England, are at least inexpensive, and sufficiently effective. Citrate of lime, which seems to be the safest form in which the acid principle can be concentrated, and is the substance whence the citric acid is directly manufactured, is now prepared to some extent in Italy, although within the last quarter of a century this preliminary process was considered impracticable from a remunerative point of view. A very well-known authority on the subject laments in these terms the remissness and ignorance of his countrymen in

ch alone permits foreigners to reap that harvest which
ians neglect to gather and garner for themselves. The
ctions raised in bygone days, from the supposed impossibility
procuring at home a sufficient quantity of proper chalk, have
n shown to be utterly mistaken with respect to the produc-
of citrate of lime. Objections of a similar nature are now
ted with regard to the production of citric acid, and have
n partially disproved already by the establishment of a
ish firm in Messina, which has undertaken successfully the
nufacture of citric acid in conjunction with tartaric acid.

With regard to the essential oil industry in Sicily, it is said
be both widespread and prosperous. Essence producers and
orters are numerous. The essential oils are derived from
varieties of the Citrus group, though they differ considerably
quality, that expressed from Bergamot being the best, and
n follow the Lemon, Orange, and Citron, the relative value
the essence being in inverse order to that of the juices.

The mode of payment of the workmen engaged in expressing
essential oils is peculiar. Instead of being paid at a fixed
per day or hour, or for the weight or number of rinds expressed,
is remunerated according to the amount of essence he succeeds
extracting out of a given weight of rinds.

It is stated that, though the bulk of the oil produced in, and
ported from, Sicily is quite pure, yet it is sometimes adulterated
with other essential oils, and sometimes with turpentine, or even
with resins. The occurrence of these adulterations seems to
have discredited and unsettled the market value, so that it became
necessary, or least expedient, in some cases to submit it to
analytical test before exportation. Owing to these precautions,
the character for genuineness of the Sicilian essential oils has
been redeemed, or rather maintained.—*John R. Jackson, Kew.*—
Gardeners' Chronicle.

LETTERS TO THE EDITOR.

NOTICE TO CORRESPONDENTS.

["C. DANVERS." Please note that the books required can now only be
procured from Ceylon, as per directions in advertisement. "X." No. Very
sorry, but the names of correspondents to this paper are held sacred.—ED.]

TO PICK AND PRESERVE TEA SEED.

SIR,—Wishing to keep over a few maunds of tea seed from
my present crop till next year, I should be extremely obliged
for any hints as to the proper means to adopt.

I am allowing my seed to fall from the tree, gathering it
every two or three days. I then dry it by spreading thinly on
the floor of the tea-house in a cool corner.

My idea as to subsequent treatment is this: To take some old
tea chests, boring numerous holes in the bottom to ensure
ventilation. Then a layer of straw over the holes. Then thin
layers of seed and straw alternately. Finally to nail on the lid,
perforated, and keep in a dry godown. The temperature here
runs from 58° to 65° during the next few months.

While on the subject of tea-seed, can your readers tell me
which is the best method to pick it from the tree? I have been
told that allowing it to drop results in a very large percentage of
light seed. Personally I have found this to be far from the case.
Hand picking off the tree is costly; there is danger of picking
unripe seed, and great damage is done to the tree unless special
ladders or scaffoldings are erected all round. With over a
hundred trees to pick, the cost of these ladders is not light.

TEA SEED.

HUMUS AND COFFEE.

SIR,—“H. G. R.” in his criticism of Mr. Nelson’s writings,
quotes many scientific authorities to prove that humus is not a

very potent source of manure, and also talks of the dangers of too
much humus. I should like to ask him if he ever knew of a
case in which too much humus damaged coffee, or if he has ever
tried to damage it by these means? I have repeatedly tried this
experiment. I have planted coffee in land covered a foot deep
with leaves and cumbered with all the logs and twigs of an
unburnt forest. It grew the finest coffee in the district, such
in fact as never had been grown on burnt land. I can also
show magnificent bushes growing in poor land, the result of an
enormous amount of cut undergrowth being thrown into this
corner every year. No manure has been applied here, and the trees
crop well. I have often tried covering the ground with a layer
of jungle undergrowth six inches deep and burying it under earth
taken from renovation pits. The effect is as good as that of
any manure I know. I don’t know how many tons an acre a
layer of six inches of humus amounts to, but I can confidently
assert that the more the humus applied in this way the better
the effect. The only difficulty is to get enough, as I admit a
thin layer of humus produces little or no effect, but this is
hardly in favour of the theory that land becomes foul and sour
from an excess of humus. An ounce of practice is worth a pound
of theory. It is a notorious fact that some of the oldest and best
cropping and longest lived estates were opened without burning,
the forest being left to rot on the ground or buried in trenches.
Clearings opened on adjoining land off which the forest was
burnt never became such fine fields or cropped as well as the
unburnt clearings. Where then is the practical proof of the
theory that burning improves the land and that the fertility of
young clearings depend on the mineral constituents freed by fire?

J. W. H.

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma loppings, &c., contain per
ton:—

61.50	lbs.	Nitrogen.
57.38	„	Potash.
14.92	„	Lime.
13.68	„	Phosphoric Acid.

Orders should be booked early for the coming crop of seed from
the parent trees of above analysis at Rs. 6 per pound containing
about 2,000 seeds. *Germination guaranteed.*

*Only thornless variety extant, and is not procurable anywhere save
from the MANAGER, Arienkew Estate, Shencottah, Tinnevely.*

COFFEE.

Three desiderata.

“Coffee, to be good, must be as
black as night, as bitter as death,
and as hot as sheol.” So says a Brazilian proverb, as
interpreted by a contemporary.

Queensland coffee.

The *Queenslander* states that a
planter on the Russell River has
grown and sent to market this year three tons of dried
coffee berries. The price paid on board ship at Cairns was
9d. per lb. in the parchment. It is understood that 6d.
per lb. at the plantation would leave a sufficient margin to
make the industry a profitable one.

Leguminous shade in
Africa.

Mr. Nelson’s numerous papers on
leguminous shade, some of which
have been republished in the *Central*

African Planter, have aroused considerable interest in Nyassaland. Shade of any sort is so foreign to the local planter that the interest taken in choosing leguminous trees is all the more remarkable. Owing to the fear of leaf-disease, it is not likely that *Erythrina lithosperma* itself will be planted in Africa just now, though it is very possible that sufficiently close relations may be found indigenous to the country itself.

The markets.

The *Produce Markets Review* of the 14th ultimo says that, considering the rapid way in which the present Brazil crop is being brought to market, it is surprising that prices have continued so steadily. Indeed, in the early part of the week, in spite of over a $\frac{1}{4}$ million bags having been received since the commencement of the crop in excess of the very large total of last year, prices in the terminal market improved about 9d. per cwt.; since then, however, the receipts have been larger than ever, and nearly all the advance has been lost. The present prices are no doubt attractive and are producing a larger consumption, but as has been before pointed out, the stocks are too enormous to warrant any material advance. At the auctions, only common and medium grades, mostly Columbian and Guatemala, have been brought forward; the demand has been good and prices are slightly dearer. A further good business has been done privately in Costa Rica, and quotations are again rather higher. Plantation Ceylon and East India continue to sell well at full prices.

Consumption in India.

A correspondent writes: "Regarding your notes on what I said about coffee consumption in India, I did not intend my figures to be looked upon at all as an estimate, but in using the 2,240,000 with a certain quantity of coffee to show how easily a large amount of coffee could be accounted for. I think it is altogether impossible to make an estimate without going to work in some very methodical way, and then there are very great difficulties in the way of arriving at even approximate results. Your idea of 20 to 30,000 tons I'm afraid won't do, for I don't see where the stuff is grown. Certainly not in the coffee districts known to us."

Our correspondent is perfectly correct in saying that there are very great difficulties in the way of correctly estimating the amount of crop consumed in the country. The most obvious method is that of deducting the crop exported from India from the total crop raised, but this is impossible owing to the fact that there are no accurate statistics of crop available. Nor is there much likelihood of such figures being compiled in the near future, when it is remembered that the number of native plantations in Mysore alone was (according to Mr. Elliot) close upon 100,000 in 1890-91, mostly consisting of small patches only averaging perhaps 5 acres or less. In 1895 the Government returns showed 283,432 acres of coffee to be under cultivation. If the yield per acre averaged as much as 3 cwt., the total crop would be 850,296 cwt., or an excess of 524,808 cwt. over the exports for 1894-95 presumably consumed in the country. Or taking the average at only $2\frac{1}{2}$ cwt., the crop would still show an excess of 241,376 cwt. over exports.

There is yet another way of calculation left open. The value of the 310,457 cultivated acres (including tea and cinchona) may be reckoned at Rs.19,65,19,281. In order to

show a profit on the plantation industry of 5 per cent. the capital value (taking the exports at Rs.2,77,00,670 expenses at Rs.3,41,50,242), the amount of produce consumed in the country must be 37 per cent. of the whole.

AMERICAN NOTES: THE COFFEE SUPPLY.

WRITES the New York correspondent of the *Grocer*, issue of the 31st July 1897:—

The record of the year's coffee trade has just been completed, and proves of unusual interest in that it shows an increase in deliveries in the United States of 17·2 per cent., and in Europe and the United States combined of 9·8 per cent. This gain is the more remarkable when we consider that for several years the deliveries of coffee have been practically stationary. Another marked feature is the heavy decline in prices, to which we may credit the increased consumption, due in part in America to the rivalry between the large coffee-roasting establishments. Twenty years ago the southern, south-western, and western states took the raw bean, which consumers roasted in pan in a very imperfect manner. It required the work of years to overcome the prejudice against coffee obtained from the stores roasted. A mother of the Arbuckles of Pittsburg, Pa., had a habit of coating roasted coffee with a preparation of egg, which gave it a gloss and preserved the aroma for a year or more. This recipe her sons acquired and controlled and introduced to the public as glossed package coffee. Under ordinary circumstances coffee loses flavour from the time it leaves the roaster, and it was difficult to make consumers believe that success had been discovered which would keep the roasted bean in perfect condition. In time roasted coffee in packages came into general use, and at the same time the prejudice against roasted bulk coffee disappeared as enterprising dealers bought small cylinders and roasted their daily supply so as to give coffee to consumers in fine condition. Then the introduction of the portable coffee-mill into retail sales dissipated any remaining prejudice, and taught people that roasted and fresh ground coffee perfectly pure could be had without the trouble of roasting it at home. The glossed coffee was protected by patents, and the owners of that patent made many millions. At last opposition started, and when parties identified with the 'S. Trust' acquired a controlling interest in the largest competing roasting plant, prices went down and the sale of package coffee became general in largely-populated centres, where previously it had little or no sale. The retail price went from 1s. down to 6d. and 7d. and consumption increased very quickly.

In July, 1896, the month's deliveries were 319,358 bags, while in June, 1897—a year later—they were 490,719 bags. As prices dropped, sales increased. In August, 1895, No. 7 Rio coffee sold at $16\frac{1}{2}$ c. in July, 1896, at 13c. ($6\frac{1}{2}$ d.); in June, 1897, at $7\frac{1}{2}$ c. ($3\frac{1}{2}$ d.). Not since 1883 has coffee been so low in price as at present. In December, 1882, No. 7 Rio sold at $5\frac{1}{2}$ c. ($2\frac{3}{4}$ d.), and the highest price of the year was $8\frac{1}{2}$ c. (4d.). Low prices ruled, and the consumption increased 10 per cent. annually until 1897, when an era of high cost coffee began, which ended in 1897, but consumption did not grow during the period to any marked extent, and yet population increased steadily from 60,000,000 to 70,000,000. During the year closing June 30, the deliveries in the United States reached 5,088,594 bags; in Europe 7,155,610 bags, making a total for both countries of 12,244,204 against 11,142,813 bags in 1895 and 1896, and 11,153,697 bags a yearly average for the past six years.

The great decline is mainly due to the remarkable increase in crops in Brazil, particularly in the Santos district. For eight years past this great empire exported an average of 6,060,250 bags, but in 1896-97 the exports rose to 8,634,000 bags, or nearly 71 per cent. of the total arrivals in Europe, and the United States and Brazil combined 77 per cent. to the supply of this country. In 1891-92 the country exported 7,267,000 bags, but two years later only 4,000,000 bags. This year's crop is estimated to fall behind last year's 1,000,000 bags. If 1897-98 should be followed by such a decrease in yield as occurred from 1892 to 1894, we should witness in 1898 quite as sudden an upward flight of prices as the downward turn of markets of the world took in 1897.

If low prices continue, consumption ought to increase 8 to 10 per cent., and the world's total requirements go up to 13,000,000 bags. To meet this there was a visible supply, in July, 1897, of about 4,000,000 bags; add the Brazil crop of 1897-98 estimated at a minimum of 7,000,000 bags, and the crops of other

s at 4,800,000 bags, and we have a total estimate supply for the present campaign of 15,890,000 bags, sufficient to leave a carry-over 1898-99 of 2,300,000 bags. On this basis this present year is to be of low prices and big consumption, unless a big European war or other unexpected "if" enters into the question. The National Bureau of Statistics has just published an elaborate program showing the sources of coffee supply during 1896, as follows:—

	Pounds.	Value—\$
Central America ...	38,631,191	6,517,834
Mexico...	23,975,477	4,040,443
Brazil ...	395,106,568	54,019,900
Columbia ...	19,228,311	3,029,947
Venezuela ...	52,019,994	8,128,254
East Indies ...	19,515,324	3,780,325
All other countries ...	32,121,050	5,276,421
Grand Total...	580,597,915	84,793,124

In this connection it may be of interest to note that of imports of 1898,372 pounds of tea, China contributed 50,916,111 pounds, Japan 52,467, and all other countries 4,529,794. From this it appears that the Ceylon and India tea interests have a great field of operations they would displace China and Japan as sources of supply.

TEA.

Jubilee Tea-cup. The Jubilee Tea-cup is Mr. Blechynden's latest. It is described as "brilliant with the English colours."

Lushai seed. The tea seed jungles in the Lushai Hills have now been let by Government to a European contractor, to prevent the wholesale destruction of the trees by the Lushai tribes. The present year's crop is, by the way, already bespoken.

Good roller. Most planters know and like Jackson's Little Giant Roller. The 28 in. Economic has also met with favour, and now an even larger size, a 32 in., has been lately introduced. The pattern is the same in all sizes, and is certainly hard to improve on.

Packing machines and London bulking. Seeing that in but a very small minority of London warehouses are content packers used, the danger of thus packing on the large scale is manifest. For, once the machine-packed tea is opened out, it is quite impossible to repack it by hand (or other feet) without crushing and breaking it to an inordinate degree.

Assam and Darjeeling. The great feature of the opening tea season has been the excellent position achieved by Assam teas, which have realised exceptionally high prices, and the comparatively poor consignments from Darjeeling. Generally speaking, the season in Upper India promises to be rather below the average, which means that the increase in production will not be so marked as usual.

Fish Guano. A Ceylon reader writes us from Kandy that Fish Guano has been used on tea with very poor results. The favourite fertilizer employed is nitrate of soda. A comparison between the two is of course impossible without the fullest data, but we cannot help thinking that the guano has not been given a fair trial. We hear it is a new but great favourite with coffee planters in South India.

South India.

In their Monthly Market Report, dated London, 13th August 1897, Messrs. Arbuthnot & Co. report:—"Rather over 5,300 packages were sold during the month at an average of 6½d. per lb. against 6d. per lb. for 2,000 packages in June, this rise being due to a slight improvement in quality in some cases, helped by a better tone in the market. Travancore as usual sent the largest portion of the month's supplies, the more desirable marks being well competed for, and the best averages were obtained by 'Bon Ami,' 'Kuduva Karnum,' and 'Penshurst.' Consignments from the *Neilgherries* were again small, the highest results being secured by invoices from 'Glendale' and 'Kodanad.'"

Testing tea-seed.

A Planter Correspondent, writing to a contemporary, makes the following very sensible remarks on the subject of tea-seed:—"It would be a grand thing, and would save much misunderstanding and unpleasantness, if there were some recognised methods for testing seed, but how is it to be done? Every man has his own idea of what seed should be, and the standards differ widely. I have sold seed for some years, and have often been amused at the different ways men will test the seed. Some men seem to think you will try and do them, and after testing the seed are afraid to let the seed out of their sight; others again are just the very reverse and trust one too much, which makes it awkward for the seller. Some seed seems to travel much better than others—why, I cannot understand. I often think, too, that after its arrival on the garden things are done to it to either retard its sprouting or to force it, and very often I think this has something to do with it not doing so well as expected. Then, again, when the seed should be plucked is another bone of contention. I myself always shake my seed down, and even then I have been told I have plucked it *kutchu*. So when doctors disagree, etc., 'what can do?'"

Tea growing in Australia!

To those who have been doing their utmost to develop the Australian market, it will come as an unwelcome surprise to learn that, as in Russia, the consumer is now trying to become a producer. Let us hope his efforts will come to a like unsuccessful ending. We insert the following cutting from the *Australasian*:—

"Mr. G. W. Robinson, of Narre Warren, is one of those who go out of the beaten track in his endeavour to find something new in the way of rural industry. About twenty-five years ago he obtained from the late Baron von Mueller a few specimens of the Chinese tea plant. Finding they grew well in his locality, he saved some seed, and grew about 100 plants, and for some years past he has made experiments in the way of curing the leaves for home use. His success was greater than he expected, and he has gone on improving in his system of preparing the tea. In the hill country beyond Dandenong the annual rainfall is heavy, and the tea plant grows well, being perfectly hardy. Last year Mr. Robinson grew about 10,000 tea plants from seed, but his plantation was invaded by an army of grasshoppers, who destroyed the whole of the young plants. This year he is raising about the same number of plants, but has taken the precaution of growing them under cover. The tea, as prepared by Mr. Robinson, has not the finished appearance of the Indian or Chinese article, but it has a pleasant odour, and is said to be strong and of fair flavour."

Hill and plains notes.

The following remarks in a contemporary may find a local application:—"Schemes for amalgamating hill tea gardens with the plains gardens are cropping up every day. Rington, one

of the best and most promising gardens in the hills—a garden which is bound to pay twenty per cent. ere long—has been already amalgamated. Springside is about to be dittoed, and Tukvar, another fine hill garden, is spoken as also to be joined to gardens on the plains. I am surprised that the shareholders in Darjeeling gardens are so blind to their own interests as not to see where they are being led: New gardens are being opened out every day in Assam and the Dooars, and when these and the young gardens already in existence come into full bearing, and millions and billions of pounds of additional tea are put on the market, the price of such tea will be nowhere, and it will hardly pay to grow and make it. It will be entirely different as regards Darjeeling tea, because it is the best in the world. There is not another acre of land available in the hills for its growth, and it will be always eagerly sought everywhere, and command its present, if not a much higher, value. The result will be that when the plains grown teas of the amalgamation are paying nothing, their owners will have the profits of the joined hill gardens to fall back upon for their dividends. Blind! Blind!”

The London Market.

In its issue of 16th ultimo; the *P. M. Review* says:—

Indian Teas.—The market is stronger for most descriptions, and nearly the whole of the 22,000 packages offered at auction changed hands. The sales included a better selection of the medium and fine Assam growths, and higher prices have been obtained, the bidding being brisk at the advance. As usual, at this period of the year, when the market has been comparatively bare of the more useful medium and fine grades, as was the case at the latter end of the past season, the demand generally exceeds the supply, and extreme prices are paid. When, however, the immediate requirements of the trade have been met, and provided there is a fair proportion of these kinds coming forward, a steadier or probably lower market may be expected. The Darjeeling Teas continue to be of moderate quality, but, owing to prices being reasonable, they are going more freely into consumption, and a fairly good business has been transacted in them. Sylhet Dooars and Cachar growths do not show any material improvement, being generally poor in cup, consequently they do not attract much attention, although values remain steady and will no doubt continue so until the arrival of larger shipments. There has been a fair supply of Travancore brought forward, but as the character of the teas continues indifferent, they have been comparatively neglected, excepting when there has been a further decline in values. At the public sales held in Calcutta on the 12th inst., 23,000 packages were offered.

Ceylon Teas.—The largest sale on record of Ceylon Teas took place on Tuesday last, but, notwithstanding the excessive supplies, the upward movement recently noticed has continued, and all descriptions were eagerly taken at a further advance on last week's rates. In many cases the teas certainly showed an improvement in quality, but not sufficiently so to alone account for the extra money paid. The firmness is no doubt due to the fact that prices are very low, and that supplies will shortly be falling off, the official estimate of the export from Colombo for August being only 7½ to 7¾ million lbs., which is about 3 million lbs. less than last month, and, as the present stock is not large, buyers can still operate with confidence, as a further increase in prices is to be expected. At the public sales 41,680 packages were offered, of which about 1,200 were withdrawn.

The last set of questions sent round to its readers by our industrious Ceylon contemporary, the *Observer*, is worded as below. From the answers that have already appeared, opinion is in favour of increased use of wire shoots; generally upholds the present system of clean weeding; is against leguminous plants being cultivated in tea; is in favour of the present system of drainage; and alto-

gether may be summed up in the words of a correspondent "What is, is best." Neat, but only too apt a definition of the trend of agricultural thought the world over:—

QUESTIONS.

(1) Have you had any experience of WIRE SHOOTS, or seen working, and do you think them applicable much more freely to present on estates? Do they damage tea leaf?

(2) Particulars of any other Labour-saving appliances in factory of which you have had experience, or have noted among neighbours?

(3) Could small TRAMWAYS 18 in. or 12 in. gauge be applied profitably on average estates to save transport coolies?

(4) On WEEDING. Has it ever struck you that weeding (both coffee and tea) was overdone in Ceylon?

(5) With reference to saving Labour as well as saving soil, would you advise an experiment in less frequent weeding, or in what might be called, selected weeding—that is the leaving of mosses, selagin, small ferns, and other such small plants?

(6) Have you ever tried an experiment in cultivating any (of lupines, clovers—N.B., not the *Ovalis*, a common and obnoxious weed like a trefoil—) to be dug into the soil,—or would you advise such an experiment?

(7) Is the present system of DRAINAGE satisfactory? Could any practical means be devised for trapping or retaining the vast amount of soil that is annually carried away with the surface water? A favourable account has reached us of the result of planting round cuscus grass (which neither seeds nor spreads) above the drains, these grew close and strong, forming a barrier against soil being washed down, while allowing the rain to pass through.

(8) Kindly mention any means in other directions in connection with the usual plantation work where Labour might be saved?

Next as to keeping Labour, would you

(9) Suggest any special perquisites to coolies—is the giving of ground for gardens to each line generally observed—and where would it not make them more contented?

(10) Would you advise the multiplying of boutiques or bazaris until each two or three estates have their own—in order to prevent coolies wandering a distance and being tempted?

(11) Are you troubled with a liquorshop in your neighbourhood, and do you think labour would be saved if liquorshops were abolished or reduced in number, in the purely planting districts?

TEA AND CHEMISTRY.

Now while strenuous efforts are being made by the U. P. A. S. I. to raise funds for engaging the services of a skilled agricultural chemist, the following interesting article in the *Ceylon Times*, by the pen of its senior editor, will be perused with interest:—

LONDON, August

A few days ago I had the pleasure of a long conversation with men who, in their different ways, have paid a good deal of attention to the chemistry of tea, and I gathered a good many interesting facts from them. I refer to my old friend, Mr. J. Roger, late of Kelani Valley, and Mr. Bamber, the well-known analytical and scientific chemist. The subject of our conversation naturally drifted to tea, and I learnt that the last-named, who had already visited the Indian tea districts—as you are doubtless aware—thought it probable he would go there again at the invitation of, and under agreement with, the Indian Tea Association, for the purpose of reporting and advising with regard to tea manufacture. He has given considerable study to the chemistry of tea for many years past, and is firmly of opinion that the non-keeping qualities of both Indian and Ceylon teas are largely the result of too rapid firing, or such firing that thoroughly dries and scorches the outside of the leaf without completely treating the inside—often consisting of fibrous and woody material, which it is essential should be thoroughly desiccated. Nothing seems to have struck him more forcibly during his visit to the Indian tea districts than the want of system pursued in the firing of tea. If a manager were asked at what temperature he was accustomed to fire his tea, the temperature stated was so found to be that at which the tea was actually being treated in the factory was visited. I do not think, however, he would find so much the case in Ceylon, but I gathered that Mr. Bamber is

need that a great improvement could be effected in the quality of tea if more scientifically treated in the factory. As pointed out, no brewery in Europe is without its own chemist, who mainly directs the delicate operations connected with the manufacture of beer, and no brewery could hope to compete on even terms with others which was without scientific assistance in this respect. Yet once upon a time—and that not so long ago—brewing was more or less a matter of haphazard, and no brews could be relied upon to possess the same character. The uncertainty existed as is now experienced on a Ceylon estate in its tea manufacture. That the time has come when, like the brewers of old, we should, if possible, call in the assistance of science in tea manufacture, does not, I should think, admit of much doubt. The price of our staple has fallen to a point where profit is out of the question, and complaints that its quality is what it once was are far too general to be overlooked any longer. Hence of this is provided for us by the relative prices obtained for teas and by those from the neighbouring continent of India, where once our teas took the lead, they are now far behind-hand here. "Cheap, weak, watery stuff only fit to be used for blending with stronger and better Indians" is how they were described recently by a well-known blender with a long and varied experience. "It has taken the place which China tea occupied some time before you started growing tea in Ceylon", is how another described the situation. Now this is not very pleasant for one so deeply interested in the future of the industry in Ceylon to hear, and, therefore, I came across Mr. Bamber, his opinions naturally in weight with me, and I wondered if the Thirty Committee could induce to make him such an offer—on the occasion of his next visit to India—as would secure his services temporarily for Ceylon planters. He is, I believe, to receive a substantial salary from the Indian Tea Association; but a good retaining fee in our case would suffice, with a scale of fees to be paid by those who availed themselves of Mr. Bamber's services to report on the work in their estates, and to advise as to future working. At all events, I throw out the suggestion, and hope that something may be done in Ceylon to secure the services of this well-known scientist. It is to be observed that Mr. Bamber's conclusions fully bear out Mr. Roger's contentions with regard to the deleterious effects of the fermentation from the woody and fibrous portions of the leaf, especially when not sufficiently fired. Mr. Roger, as is well known, has long contended that the bitter flavor which is obtained from tea too long fermented does not arise from the presence of tannin, which is all removed from the leaf after a few minutes' infusion. It is now very certain that crustatannic acid is the cause of the unpalatable pungent, and that in tea which has been too rapidly fired, or in which the woody portions of the leaf have not had time to be thoroughly desiccated, this acid is most pronounced. To obviate this, as your readers are aware, Mr. Roger removes those portions of the leaf before making up the residue into his tea tabloids, and he, therefore, claims that they are purer, healthier, more invigorating, and less deleterious than tea treated in the ordinary way. His contentions appear, I must say, to have the support of scientific authority, but, until his litigation with Messrs. Burroughs & Wellcome is concluded, and the manufacture of his tabloids is carried out according to his specifications—which he asserts is not the case—it would be unfair to judge the tabloids now being turned out. At all events, there is scope, I feel sure, for great improvement in the manufacture of Ceylon tea, and the sooner we recognise this, and take action to secure the best scientific advice, and follow it, the better.

H. H. C.

DISTRICT ASSOCIATION.

KANAN DEVAN.

GENERAL MEETING held at Munaar Camp Bungalow, 28th August, 1897.—PRESENT: Messrs. G. O. Poulter, E. Harley, D. Martin, F. J. C. Martin, A. F. Martin, C. Burn Murdoch, W. Milne, A. H. Mead, J. Hamilton Hunter, A. H. Sharp (Hon. Secy.), and C. A. Mackenzie (Visitor).

Mr. MILNE was elected to the chair.

Read notice calling the meeting.

Read and confirmed minutes of last meeting.

Insanitary Condition of Bodinaikanur.—Read letters from the District Medical and Sanitary Officer and the President, District Board, Madura, stating that the former had visited Bodinaikanur in January last and fully reported the state of the village, and that the President of the Taluq Board, Dindigul, had been asked to give his special attention to the matter. Recorded.

Dilatoriness of the Police.—The following statement was made by the Honorary Secretary: That three months ago four suits for breaches of contracts were filed against carpenters and sawyers residing in Travancore. At intervals of one and two months two of these men returned to work and the suit against the first was withdrawn, while that against the latter was allowed to proceed and the man convicted. Neither of these men had been arrested by the police. The other two men are still at large, although from time to time reliable information is forthcoming that they are still in their own homes.

Other similar instances were mentioned, and it was resolved that full particulars should be given to the Honorary Secretary, who was asked to write to the Superintendent of Police, Trivandram, fully on the subject.

Bodinaikanur Rest House.—Proposed by the Chairman that it was necessary to build a new and pukka bungalow in the Bodinaikanur compound to the north of the present building. The cost of the same to be about Rs.3,000 and to be spread over a term of six years, the Consolidated Tea and Land Company meanwhile finding the necessary funds free of interest. The roof to be of iron, covered with matting, properly ventilated, and to have a ceiling, and that the building should be commenced without any delay, and that the Honorary Secretary take steps to have the putta of the land registered in the name of the Association. *Carried.*

Telegraph Station.—Resolved that the Honorary Secretary write to the Director-General of Telegraphs, Calcutta, requesting that the wire may be carried on to, and a station built at, Munaar, and to point out that timber may be had free of cost inside the Company's concession or for nine to ten miles of the way, and that the Association will be prepared to give the necessary guarantee.

Netticoodie Dispensary.—Proposed by the Honorary Secretary, and seconded by Mr. F. J. C. Martin, that now the Apothecary does not have to visit the Munaar and Surianalle ends of the district, he should be located at Sathapara as early as the necessary buildings could be completed. *Carried.*

Munaar Bridge and Devikulam to Mettu Road.—The Honorary Secretary stated that on 8th December 1896 he reported the bridge complete to the Dewan and requested inspection and payment of the promised Government subsidy of Rs.600. Inspection was made in March last, and on the 11th June payment was again applied for and a reply received stating that the matter was referred to the Chief Engineer. On the 21st July the Dewan was again reminded that the subsidy was still unpaid, and up to date no reply had been received. Also that on 21st July last a letter was written to the Dewan informing him that the Association had taken in hand the maintenance of the Mettu to Devikulam road and had already spent Rs.27 and over per mile and were continuing the necessary repairs and upkeep, and requested him to send the promised Government grant. This letter still remains unacknowledged.

Resolved that the Honorary Secretary again apply to the Dewan and Chief Engineer.

The meeting then closed with a vote of thanks to the chair.

The next Quarterly General Meeting will be held on Saturday, 27th November.

A. H. SHARP, *Honorary Secretary.*

28th August, 1897.

W. MILNE, *Chairman.*

DR. LAMONT'S STRONG FINGERS.

"I WAS afraid you were going to slip through my fingers," said good old Dr. Lamont.

The writer was a boy of about seventeen, then. While a student at

school, more than 300 miles from home, I was taken down with pneumonia. I had a tough time, and for two or three weeks my life was despaired of. But youth and good care won the fight, and one bright morning I was ready to go home with my dear father who had come for me. I was weak still, but well and happy clear up to the brim. Oh, what a ride! Oh, what sweet air! Oh, what a glorious world I had got back into! and what a reception from mother and sisters at the familiar house. Oh, life! Oh, health! Oh, *dulce, dulce domum!*

Such an illness, if one survives it, only makes the sense of existence and its blessings more keen and delightful. It is good rather than bad. Lucky boy, not to have slipped through the doctor's fingers.

But when a man with most of his days behind him has to write a line like this "*All my life I have suffered more or less from disease*"—why that is another and sadder story. It is the odds between an occasional thunderstorm and a sky always covered with clouds.

We quote what he says, reminding the reader that in this matter Mr. William Hodgkinson voices the experience of millions. He says: "I always had a bad taste in the mouth, no proper relish for food, and after eating had pain and fulness at the chest."

These sensations are symptoms of acute indigestion. In the stomach there is marked loss of power. The food is neither rolled over as it should be so that the whole of it in turn may be presented to the digestive fluid, nor is it duly moved on towards the outlet into the bowels. As a result it ferments and gives off irritating acids and gases; hence the patient complains of pain, weight, distension, acidity, and flatulence in that region. Thence the poisons proceed to every other part of the body, and headache, vertigo, gout, rheumatism, depressed spirits, and a score more of evils follow; among them possibly, nervous prostration, progressive anæmia, locomotor ataxia, and more or less complete paralysis.

"Frequently," continues Mr. Hodgkinson, "I was sick, and as time went on I became very weak and feeble. I consulted one doctor after another, and took various medicines, but obtained no real or lasting relief from any of them. This describes my general condition until the fortunate day when I read about Mother Siegel's Curative Syrup. I was impressed by the statements others had made concerning it, and proceeded to try it. After taking one bottle I found relief, and was soon entirely free from my old complaint. Since that time (now eight years ago) I have enjoyed good health. Knowing personally of its virtues, I have recommended this remedy to hundreds, and have never heard of its having failed to give relief. But for Mother Siegel's Syrup I should have been in my grave years ago. (Signed) William Hodgkinson. Hollington, near Uttoxeter, Staffordshire, August 11th, 1893."

Mr. Hodgkinson is well known and highly respected. He is a local preacher in the Methodist church, and by employment a quarry master. Had he gone into the grave, as he feared he should, he would have been missed and lamented by the community in which he has long been useful, and will live to be useful, we hope, for years to come.

Now let us repeat our leading thought. Short illnesses, even though sharp and dangerous, may result in good rather than harm. But a disease that drags its victim through decades of lingering distress—what shall we say of it? The trouble and suffering it inflicts is beyond estimate, and its name is indigestion and dyspepsia.

And the name of the medicine that cures it Mr. Hodgkinson has done you the favour to mention with clearness and emphasis.

WE SELL PURE DRUGS.

Pharmaceutical Preparations, Soaps, Perfumery and Toilet Requisites, Patent and Proprietary Articles, Surgical and Scientific Instruments.

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MARKET SUPPLEMENT.

SATURDAY, SEPTEMBER 11, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (August 20, 1897) says:—A steady tone prevailed at auction this week and the moderate supplies were all disposed of at full value. The 1,100 bags East India brought upward met a good demand, ordinary and medium qualities realising various rates, whilst fine colory grades sold at extreme prices.

Central American kinds were offered on a moderate scale and disposed of at about valuations for most descriptions.

The Terme market has declined 6d. during the week in consequence of continuation of the very heavy Brazilian receipts.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for Week ending August 18th, 1897, says:—Bank rate 2%. Bombay exchange closes at 1s 3½d. Brazil Exchange 7½d. Rupee paper 3½% 63. per 24½d per oz.

The demand continues good for all the better qualities, whilst ordinary common are rather lower. Extreme prices have been paid for fine Ceylon and Jamaica; ordinary pale Columbian shews a decline of about 2s; Rio markets are dull.

The sales included:—51 casks and tierces 36 barrels and bags Plantation Ceylon sold at 80s to 114s; 78 bags Native Ceylon sold from 70s 6d to 114s 6d. Of 1,024 bags East India, 534 bags Coorg sold from 73s to 114s 6d, 317 bags Neilgherry chiefly sold from 72s 6d to 96s 6d, and 173 bags Travancore sold at 73s to 96s 6d; 264 barrels, 56 bags Jamaica chiefly sold at 49s to 124s 6d; 551 bags Costa Rica good part sold from 50s to 114s 6d; 2,264 bags Guatemala chiefly sold at 55s to 88s; 96 bags Salvador part sold at 54s; 442 bags Mexican part sold at 85s to 86s 6d; 165 bags Vera Cruz and Coban part sold at 106s; 1,181 bags Nicaragua part sold at 56s to 62s; 3,140 bags Columbian good part sold at 45s 6d to 95s 6d; 19 bags Guayaquil bought in; 19 bags Trinidad sold at 43s; 10 bags Lahat bought in; 24 half-bales Mocha bought in; 25 bags African Liberian sold at 39s 6d; 24 bags Travancore Liberian sold at 36s; 749 bags washed Santos good part sold at 52s 6d to 59s 6d, and 250 bags Santos on quay were bought in.

Daily receipts have averaged 22,857 bags in Rio, and 32,286 bags in Santos.

Futures have been further depressed, owing to the continued large receipts, and close quiet at a decline of 1s to 1s 3d, viz.:—Good average Santos in Havre, September delivery, fcs. 43.00, in Hamburg pf. 35½, and No. 7 ordinary Rio in New York \$6.60.

To-day's London official quotations are:—

	Aug.	Sept.	Dec.	March	May
Rio	33/6	34/-	34/6	—	—
SANTOS	35/-	35/-	35/9	36/3	36/9

We quote:—

Ceylon, mid. to good mid.	101½ @ 106/	Costa Rica, mid. to fine...	83/ @ 109/
Do. small to low mid.	80/ „ 100/	Do. ord. to low middling.	60/ „ 82/
East India, mid. to good		Jamaica, good to fine ord.	52/ „ 66/
mid ..	89/ „ 103/	Do. greenish to fine	
Do. small to low mid.	75/ „ 88/	colory...	74/ „ 125/
Guatemala, mid. to fine...	78/ „ 102½	African	30/ „ 32/
Do. good ord. to low		Columbian, ordinary	48/ „ 53/
mid...	60/ „ 77/	Do. good ord. to	
Salvador, good ord. foxy		low mid...	54/ „ 78/
greenish...	57/ „ 58/	Do. mid. to fine...	79/ „ 98/

Receipts in Brazil compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
Rio	696,000	530,000	354,000
SANTOS	1,121,000	817,000	500,000
	1,817,000	1,347,000	854,000

Prices realized at auction for the principal Marks of East India:—

	COORG.				
	A	B	C	PB	T
IM	82/-	76/-	66/-	80/-	52/-
Bala Kadoo					
—, —	109/6	98/-	82/-	117/6	74/6
Santicooa					

	NEILGHERRY.				
	A	B	C	PB	T
Thiashola	96/6	88/-	78/-	102/6	58/-
Nilgiris					

	TRAVANCORE.				
	A	B	C	PB	T
Elephant	92/6	83/-	73/-	96/-	69/-
Kedugamudi					
—, —	96/6	86/-	75/-	101/-	71/-
—, —					

Landed last week ... 552 tons. Deliveries ... 743 tons. Stock ... 13,096 tons.
Do. last year ... 340 „ „ „ 570 „ „ „ 10,588 „

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated August 20th, 1897, states:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	139,130 packages.	316,705 packages.	11,381 packages
1896-1897...	146,790 „	284,675 „	11,980 „
27,621 pkgs. INDIAN			
35,653 „ CEYLON			
1,246 „ JAVA			
Total 64,520 packages were offered in public auction this week.			

Indian. Increasing supplies of useful liquoring Tea coming forward on a market comparatively denuded of such kinds are creating an improved demand, and a more general business is being transacted in the country than for some time past. Dealers are thus encouraged to operate with more freedom in the Public Auctions and prices have further improved to a fractional extent. Teas from Assam have again shown satisfactory quality, whilst some of the invoices from Darjeeling are a little better in this respect, though still not up to the standard of previous years. The following averages are worthy of note:—“Tingri T Co. Hoogrijan,” 1/7½; “Jokai T Co. Hattiali,” 1/7; “Darjeeling Co. Ging,” 1/6½; Amal. T Co. Moondakotee,” 1/5; “Jokai T Co. Tippuk,” 1/4.

SUPPLEMENT TO "PLANTING OPINION."

Week's av. of Tea sold on Garden Account, 1897, 21,315 pkgs.,
av. 10d. 1896, 26,027 pkgs., av. 10d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	10,626 p 1/-	12,770 p 1/-	34,223 p 11½	40,816 p 11½
Cachar and Sylhet.	4,781 p 7½	5,840 p 7½	19,509 p 6½	25,634 p 7½
Chittagong	120 6½	—	331 p 4½	172 5
Chota Nagpore	—	10 5½	—	260 7½
Darjeeling	1,533 p 11½	2,066 p 10½	11,753 p 9½	9,645 p 11
Dooars	1,914 p 7½	4,126 7½	10,141 p 7½	11,413 p 8
Kangra, &c.	291 p 7½	—	1,344 p 6½	1,009 p 6½
Neilgherry	203 p 6½	—	1,165 p 6½	503 p 6½
Teraí	567 p 7	651 p 6½	816 7½	651 p 7
Travancore	1,280 p 6½	564 7½	9,449 p 6½	5,937 p 7½

Total sold on Garden Account 1st June to date 1897, 89,231 pkgs., av. 9d.
1896, 96,344 pkgs., av. 9½d.

Comparative prices of Indian Tea in London:—

		1897.	1896.	1895.	1894.
DUST.	(Fair ordinary, dark liquor)	3½d	4½d	4½d	4d
FANNINGS.	(Red to brown, strong rough liquor)	4½d	5d	4½d	4½d
BROKEN TEA.	(Brownish to blackish, strong liquor)	6½d	7½d	6d	6½d
PEK. SOUG.	(Blackish greyish, useful liquor).	7d	8d	7d	7½d
PEKOE.	(Greyish to blackish, some tip, useful liquor)	8½d	9d	8d	9½d

		1897.	1896.	1895.
PEK. SOUG.	(Blackish greyish, inferior liquor).	5½d	5½d	5½d
PEKOE.	(Blackish greyish, some tip, inferior liquor)	6d	6d	6d

Ceylon. Another large sale was held this week, and as q continued to show an improvement, the Teas met with a ready sale a prices. Shipments from the Island to this country for August are estimated at only 6½ million lbs. The following averages ma mentioned:—"Ormidale," 1/2½; "Ingestre," 1/1¼; "Carolina 7 Goatfell," 1/-; "Portmore T Co. Portmore," 11½d.

Average for week 7½d., against 8d. last year.

Ceylon Tea sold on Garden Account 1st January to date 730,328 pkgs., av. 7½d. 1896, 662,033 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

		1897.	1896.	1895.
PEKOE SOUG.	(Ordinary leaf; fair liquor)	... 6½d	6½d	6¾d
PEKOE	(Ordinary leaf, little twist; fair liquor)	... 7½d	7½d	8d
PEKOE SOUG.	(Rather bold leaf; indifferent liquor)	... 5d	5½d	5¾d
PEKOE	(Somewhat bold leaf; indifferent liquor)	... 5½d	6d	6½d

Java. The 1.254 packages offered included some very useful liqu parcels of Assam character from the Perbawattee and Goalpora Es For these competition was good, whilst the Teas from the other Es commanded more attention than has been noticeable of late.

Bank rate 2 per cent. Exchange on London three months sig Calcutta 1/3½, Colombo 1/3½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 10d.) August 20th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, L and Vario	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	P
Neilgherry	203 p	6½												
Curzon	106½c	6							50½c	†6½	41½c	† 6½	15½c	†
New Hope	97 p	6¾	33½c	8¾	12	6½	11	8½	18	5¾	23	5½6½		
Taipoo	95 p	7			31	7	30½c	9¾	34	5¾				
Travancore	1280 p	6¾												
Atchencoil	61	6½			18	6	21	7¾	15	5	4	5	3	2
Belford	137½c	5½			72½c	5½	48½c	6½			12½c	4½	5½c	
Corrimony	100½c	5½			75½c	5	20½c	7			5½c	3¾		
Glenmary	234 p	7¾	176	7½9½	35	6							23 p	3
Granby	22½c	5½			19½c	6					3½c	4½		
Invercauld	101 p	5½	27	6½	70	5½							4½c	
Isfield T Co	39	7					39	†6½+7½						
Riviera	77 p	5			47	5	21 p	6 6½			3	3¾	6½c	
Rockwood	64½c	5			53½c	5					11½c	4½		
Seafield	119½c	6½			86½c	5½6	31½c	8			1½c	4½	1½c	
Travancor TEstBA...	326 p	7½			78	† 6½6¾	177 p	8½9½	34	5¾6½	19	5½5½	18	

Teas marked thus † are New Season.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

[L. II.]

COONOR, SATURDAY, SEPTEMBER 18, 1897.

[No. 25.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been moved to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c. Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 24th September 1897.

Coorg. POLLI BETTA, 15th September.—*Weather.*—Monsoon has probably left us. Very fine weather. Only a sprinkle once or twice. There seemed to be a big shower Ammatti way yesterday. *Plant-diseases.*—Coffee still looking very fine on the whole. *Labour.*—Coolies continuing to drop in. *Health.*—Fair. *Interesting Item.*—Marriage of Mr. Seager, of the Forest Department, to Miss D'Vaz, at Mercara, to-day.

Nilgiris. SHOLUR, 14th September.—Since last report the weather has moderated, and though for three or four days a cold W. to S. W. wind was blowing, which continued to check flush, the last three days have, with the exception of cold mornings, been everything a planter could desire. Rainfall for month 2'37, making 45'09 to date. Highest and lowest temperature 76° and 57° respectively. *Health.*—Good. *Labour.*—Plentiful. *Grains.*—Rates very gradually improving. *General.*—The Davidson's "Sirocco" tea roller is a great success, but requires great pace and a real good wither to obtain best results. Unless the next week does wonders, the show of flowers and vegetables at Ooty on the 17th instant will be a poor one.

COONOR, 16th September.—Since the 8th the weather has changed to glorious sunshiny days and cold nights. Last break before the N. E. Monsoon, I fancy. Coffee looking very fit, but crops are poor generally. Black bug generally "done finish" for the time, but N. E. will see it back! Tea flushing again fairly, and a good deal more flavour is apparent. Flush worm bad to the last. Our Club is making steady progress, and, when finished, will be one of the finest, for its size, in South India.

GENERAL NOTES AND ARTICLES.

Wire shoots and roads.

In the correspondence now going on in the *Ceylon Observer* on the question of labour-saving appliances and methods, opinion is unanimous on the great utility of wire shoots in conveying manure and tea leaf to different parts of estates. As an economiser of labour, and consequently of money, they are unsurpassed and obviate in many instances, perhaps, three-fourths of the length of the bandy roads that would otherwise be necessitated. And yet in Ceylon, as in South India, wire shoots are generally conspicuous by their absence. It is hard to understand this, as they are undoubtedly the most obvious and simple labour-saver yet adopted.

To denaturalize salt.

Pressure on our space forbids us to quote in full the translation of the text of Prussian Salt Law as affecting the consumption of salt for industrial purposes that lately appeared in a Colombo contemporary. It suffices that to effectually denaturalize salt for use as manure, all that is required is an admixture of one per cent. of soot, though numerous alternative mixtures are given, such as black oxide of manganese, finely powdered charcoal, lamp-black, cocoanut oil, palm oil, vitriol or alum. In case the U. P. A. are inclined to approach Government on the subject, in view of the great and varied uses to which salt can be applied in agriculture, were the tax removed, we are sending the Secretary the full text of the law alluded to.

Drains.

One of the many puzzles that worries our editorial brains is the extremely scant attention given by some planters to such everyday things as drains. We know of a certain large and steep estate which does not contain a single cross-drain. Yields steadily falling off have induced attention being given to extensive artificial manuring—a most estimable subject to turn one's attention to, but *when* are the drains coming? This of course is an extreme case, but it is still far from unusual for steep estates to treat draining as one of the least, instead of one of the most, important works on the garden. Practically, it is, we venture to opine, perfectly possible to arrest wash altogether by means of efficient drainage. And not only to arrest it, but to actually prevent it occurring. Renovation pits have their uses, but also their dangers. Provided draining is efficiently carried out, it is difficult to find any serious objection against it whatever.

To arrest loss by wash, fairly frequent drains of a gentle gradient, say one in 35 or 40, are sufficient. Periodical attention is of course necessary, inasmuch as the fact of arresting the washed soil causes the drain to be silted up gradually through its entire course. In cleaning out the drains, be careful that the silt is thrown above and not below the drain. To stop wash altogether, similar drains every 20 or 30 feet on very steep land would be necessary. The only apparent objection to the system of gentle gradients is on account of its chief value, *i.e.*, catching the valuable surface soil that would otherwise be carried away. In other words, because of the frequent attention that is needed. Seeing that planters are nowadays almost at their wit's ends how to satisfactorily replace their lost soil by

the expensive means of artificial manures, surely the objection stated does not deserve serious consideration.

A very old idea is to plant some sort of harmless plant above all roads and drains to catch the silt. Guinea-grass has rightly gone out of favour for this purpose, but not has yet taken its place. Box would be an almost perfect plant, save for its extremely slow growth. A writer in the *Ceylon Observer* mentions *Pilea microphylla* as being an excellent weed for the purpose.

RANDOM JOTTINGS.

SOME TIME now, isn't it, since I favoured your readers with my lucubrations. How they must have missed them! I notice that this paper is now the *Official Organ* of the great U. P. A. Doubtless this means great things in the future for the "P.O.", which fluttered so timidly into the world just two years ago.

It struck me as a great pity that the Mysore Planter who lately wrote to the *Mail* about the Dewan's Agricultural loans to coffee planters should give away his industry completely! *Alien cultivation*, forsooth! Out upon your faint heart, is this a time for men to talk about the probable extinction of coffee in Mysore? Gird up your loins, pay your rupee per acre for scientific aid, and it will be enough to chant your funeral requiem when you are dead and buried. Not that times aren't bad enough, in all respects, for science. But everyone knows that: An obstacle is no thing to cry over, its got to be removed.

DESPITE the cloud of disingenuous arguments enveloped round the *Exchange Question* by its official apologist, the main principles are as clear as ditch water. Government declares that a low exchange involves it in bankruptcy. That may be. Yet it is considerably worse for a country to become bankrupt than its Government. In juggling with the Exchange, Government tries to delude the public with the idea that the only alternative would be the imposition of oppressive taxes. What it really does is, in order to save, say, a crore of rupees on its home remittance, to reduce the wealth of the nation by a hundred times the amount. The Indian public is ready enough to contribute its just dues to keeping up its only possible form of Government. But it sees no possible reason to be practically mulcted of one hundred rupees when only one is required. For by this artificially high exchange, not only does the producer suffer great present pecuniary loss, but is prevented from extending its enterprise, resulting in present and prospective serious loss to the Government itself. The question of trade *versus* free trade is now no question of theory alone, it is one of practical politics. A small direct export tax would certainly be felt far less than the huge indirect tax now levied by the artificial rupee. And as certainly would it result in giving Government the amount, and even more, which it obtains at present by its financial legerdemain.

NOTHING

CENTRAL HOTEL,
INFANTRY ROAD, BANGALORE.

(Under English Management.)

The most comfortable and convenient for visitors.

TERMS MODERATE.

SUNDAY CLUBS, OR SOCIAL PLANTING LIFE.

For real enjoyable social life in a planting district, come to me to a locality where there are no European stations or towns. Such a station has a most disagreeable manner of rendering planters independent of each other. A man wants a little relaxation, he straightway hies him to the station, and, mixing with members of a society which is mostly composed of retired Government officials, does his best to cut himself adrift from his own class. For Government officialdom in India, acting or retired, is a corporation that holds outside classes much as Kipling holds foreigners: as lesser breeds without the law. It is easy to see that the town-loving planter acquires by virtue of his surroundings something of the same feeling. The effect of isolation on social planting life is obvious. That strong feeling of *sprit de corps*, so prominent in more remote districts, is beautifully less. Individual planters get out of touch with each other, and save for chance, and none too welcome, meetings in the station, are little more than aware of each other's existence. At planters' meetings the effect is easily seen, the discussions are perfunctory, and want of unanimity, sometimes veiled by the shyness of dissent being garbed in silence, is the leading feature present.

As a planter living in a much be-stationed district, the effect has often struck me very disagreeably. Many have seen the schemes evolved from time to time as palliatives. The uniform have been the failures. An important minority of planters are, in increasing numbers, making their homes in the stations and only visit their plantations once or twice a week on strict business. From these nothing can be expected. It is the others, the old-style planters, who either do not care for station life or cannot afford it, who must come forward and help themselves.

There are lots of ways in which the amenities of planting life could be heightened. Failing permanent clubs, which might be difficult to build owing to lack of funds, surely it would not be impossible for an enterprising planter and his neighbours to rally round them the lonesome scattered units in their neighbourhood. If the district be depleted by wealthy members, the objections to increasing the expenditure of the station could easily be met by a Social Club being formed, the hosts simply offering the use of their house on certain days of the week. The two chief difficulties are of course the finding of the public-spirited hosts and, if evolved, to have them centrally located.

The thing is: how to start the ball rolling? The first move is with the "hosts" by the simple expedient of inviting a few of their nearest neighbours to a weekly or fortnightly social meet. To some it would appear but an ungrateful task, but if the right people are there, and if these make the proper move, the success of their little schemes is assured. If even only four or five neighbours can be induced to join the informal club, let them rest well content. A rather suitable name would be the "Sunday Club," as it is not often planters can get a whole free day during the week. Concession might be made to Sabbatarians, if much evidence, by holding a service of sorts sometime during the day, good stirring hymns being a leading feature. Planters may weary of the elaborate kneelings and postures in a church built with hands. But in their lives, planting in unison with the solemn restful heart of Mother

Earth, are deep chords of Nature's music that vibrate at times strongly in worship to their Creator.

There will be objections, of course. Fancy mixing profane social enjoyment with sacred worship, cry some. What nonsense doing the "pi" on one's only free day, exclaim others. But give and take if necessary everywhere is doubly so in the restricted circle I am alluding to. Some extra unctuous Sabbatarians may think themselves defiled by association with their heathen neighbours. Such can only be prayed for. There are others who only dislike breaking their Sunday rest and meditation for such purposes as tennis, or other athletic frivolities. These may be confidently appealed to as possessing a fair amount of human kindness. For if they feel any real regard for their erring fellow-creatures, they should surely do something more than neglect them. The gay spirits who want to have the day all fun and nothing else may on their part well meet the others half way, and add to the enjoyment of these by joining in their brief but hearty service.

Midway between these two extremes lies perhaps a more numerous section, hearty and wholesome-hearted. These look upon a modicum of hearty prayer as being as invigorating as a keen strong breeze, giving a zest and light heartedness that braces the whole system.

I fear me this modest suggestion of "Sunday Clubs" is drifting into a string of moral platitudes. It's no good, though, ignoring platitudes, as they give an easy dead level for lighter traffic to travel on.

One thing is very certain. That unless the stricter ones relax in some way as suggested, and the more frivolous attempt an occasional seriousness, neither will get much profit or relaxation out of their lives.

Who will be the first to start a Sunday Club?

KADADU.

U. P. A. S. I. SECTION.

[UNDER THE CONTROL OF THE SECRETARY, U. P. A. S. I.]

THE Secretary retains for the present the work of passing the Annual Book of Proceedings through the Press, and he is responsible for these notes. The remainder of his duties as Secretary have now been taken charge of by Mr. Allan Ronaldson, who will officiate as Secretary to the U. P. A. S. I. during the writer's absence. All communications should, therefore, be addressed to Mr. Allan Ronaldson, at 9 and 10, Second Line Beach, Madras.

It has been noticed that the Book of Proceedings, 1894, contains no Report of the Deputation of Planters that waited upon His Excellency the Governor of Fort St. George on 23rd April 1894. The report has now been reprinted from the *Madras Mail* in the form of an *Addendum* to the 1894 Proceedings, and is available at a cost of 4 as a copy, postage included. Orders should be sent to the Officiating Secretary, to whom remittances may be made in stamps. The 1894 Book is not complete without this addendum.

Government has recorded the resolution of the U. P. A. S. I. with reference to the Government's purchases of Cinchona

bark; and has directed that copies of certain papers bearing on the subject shall be forwarded to the Secretary when they are "placed on the Editors' table."

The investigation of the Malarial Parasite still hangs fire, Government having stated that, though the matter has not been lost sight of, existing demands on the medical department render the postponement of the proposed investigation inevitable.

The accounts for the year 1896-97 have been audited, and found correct. A list of donations to the Reserve Fund is appended. It is audited up to the close of the year 1896-97.

THE U. P. A. RESERVE FUND.

	RS.	A.	RS.	A.
North Mysore P. A., temporary annual subscription..	625	0		
O. Scot-Skirving's subscription	100	0		
			725	0
Nilgiri P. A.			1,489	0
Lower Pulneys P. A.			85	0
Nelliampathis P. A.—				
J. C. Abbott	50	0		
H. M. Hall	25	0		
C. Hall	25	0		
W. A. Gilbert	10	0		
P. W. E. Watts	25	0		
A. Barnes	5	0		
			140	0
Wynaad P. A.—	403	12		
J. W. Hockin	100	0		
Parry & Co., Madras	300	0		
			803	12
South Mysore P. A.			1,040	0
Shevaroy P. A.			801	0
Central Travancore P. A.—				
G. L. Acworth	200	0		
H. W. Baker	200	0		
H. J. Blandford	20	0		
S. M. Dighton	50	0		
R. H. Goldie	50	0		
R. S. Imray	200	0		
H. M. Knight	200	0		
G. Lance	20	0		
N. Macgowan	20	0		
A. E. Veale	25	0		
Hon. V. B. Wilbraham	200	0		
Glenmary Estate (per B. Lawrie)	100	0		
Kuduwa Karnum Estate (per C. H. Williams)	100	0		
			1,385	0
Coorg P. A.			2,122	8
Kanan Devan P. A.			524	8
C. G. Lechler			10	0
Aspinwall & Co., Cochin			150	0
Morgan & Son, Mangalore			300	0
Wilson & Co., Madras			50	0
Binny & Co., "			300	0
Arbuthnot & Co., "			300	0
E. M. Ewart, Shencotta			50	0
Total on 31st July 1897	10,275	12		
Aug. 2nd—Peirce, Leslie & Co.			300	0
" 10th—North Mysore Native P. A.—				
C. Vasudev Row			25	0
" 14th—Coorg P. A. (additional)			74	0
Total Rs.	10,674	12		

HARRY ORMEROD,

Secretary, U. P. A. S. I.

Audited and found correct.

A. RONALDSON.

THE FAMINE FUND.

The following is a complete list of donations to the Famine Charitable Relief Fund through the U. P. A. S.

	RS.	A.	RS.	A.
Per Nelliampathis Planters' Association:—				
J. C. Abbott	25	0	0	
" Mallundy "	25	0	0	
W. A. Gilbert	5	0	0	
A. Burnes	5	0	0	
				64
Per Lower Pulneys Planters' Association				25
Per South Mysore Planters' Association				486
Per Coorg Planters' Association				627
Per Wynaad Planters' Association				1,195
Per Kanan Devan Planters' Association:—				
H. G. Layard	20	0	0	
A. H. Sharp	50	0	0	
A. F. Martin	19	14	0	
R. F. Russell	25	0	0	
Hugh E. Tollemache	20	0	0	
				134
Per North Mysore Planters' Association:—				
J. F. Parton	10	0	0	
W. Pilkington	20	0	0	
W. Maxwell Maynard	10	0	0	
W. H. Maynard	10	0	0	
B. Cayley	50	0	0	
F. Dundas	10	0	0	
D. A. MacMillan	10	0	0	
T. N. C. Seton	10	0	0	
E. C. Bolton	10	0	0	
G. L. Delacherois	10	0	0	
A Sympathiser	10	0	0	
O. Scot-Skirving	20	0	0	
D. O. Allardice	10	0	0	
Geoffrey Schwabe	10	0	0	
F. S. Hay	20	0	0	
				220
Per Central Travancore Planters' Association:—				
G. L. Acworth	200	0	0	
H. W. Baker	25	0	0	
H. J. Blandford	10	0	0	
L. W. Crawhall	10	0	0	
S. M. Dighton	25	0	0	
J. Finch	15	0	0	
R. H. Goldie	25	0	0	
R. S. Imray	25	0	0	
L. G. Knight	5	0	0	
B. Laurie	25	0	0	
C. Lance	15	0	0	
N. MacGowan	10	0	0	
Mrs. Munro	10	0	0	
F. M. Parker	25	0	0	
J. Place	10	0	0	
D. Tollemache	10	0	0	
A. E. Veale	15	0	0	
The Hon'ble V. B. Wilbraham	30	0	0	
J. Wood	20	0	0	
J. E. Sealy (Hon. Member)	35	0	0	
				546
Per Nilgiri Planters' Association:—				
The Hon'ble Mr. Hodgson	200	0	0	
W. Rhodes James	200	0	0	
C. E. Martyn	50	0	0	
W. Rowson	25	0	0	
E. G. Windle	20	0	0	
W. L. Edmiston	25	0	0	
E. R. Kindersley & G. Compton	20	0	0	
Thomas Murray	10	0	0	
Coonoor Planter	5	0	0	
R. E. Gompertz	2	8	0	
J. G. Vernede	2	8	0	
G. & W. Oakes	20	0	0	
A. N. Groves	50	0	0	
R. E. Gompertz	5	0	0	
J. G. Vernede	5	0	0	
" Woodland's Estate "	150	0	0	
Mr. & Mrs. Harding Pascoe	80	0	0	
B. A. Marden	50	0	0	
F. T. F. Wilson	10	0	0	
R. Congreve	5	0	0	

James Stanes	...	...	...	100	0	0	RS. A. P.
H. Gerrard	...	...	...	5	0	0	
...	...	...	...	0	4	0	
T. Fellowes-Wilson	...	...	...	50	0	0	
Major-General C. H. Wilson	...	...	...	100	0	0	
M. Kinloch	...	...	...	22	8	0	
W. Marden	...	...	...	30	0	0	
Frank N. Groves	...	...	...	25	0	0	
D. Wilbraham	...	...	...	25	0	0	
James A. McIver	...	...	...	60	0	0	
...	...	...	...	10	0	0	
C. Griffin	...	...	...	5	0	0	
A. Cherry	...	...	...	20	0	0	
Colonel & Mrs. Byng	...	...	...	25	0	0	
M. Galloway	...	...	...	50	0	0	
R. Griffiths	...	...	...	10	0	0	
T. H. Griffiths	...	...	...	25	0	0	
T. Stanes	...	...	...	30	0	0	
C. Liebenrood	...	...	...	25	0	0	
P. Coot	...	...	...	10	0	0	
...	...	...	...	10	0	0	
& W. Oakes	...	...	...	10	0	0	
D. Rozario	...	...	...	2	8	0	1,585 4 0
George Salmon, Pykara	...	...	...	...	...	...	50 0 0
...	...	...	...	...	...	...	100 0 0
Louis J. Creed, Pulneys	...	...	...	...	...	...	50 0 0
...	...	...	...	...	...	...	50 0 0
...	...	...	...	...	...	...	10 0 0
...	...	...	...	...	...	...	100 0 0
...	...	...	...	...	...	...	100 0 0
Frank Clifford, Sallebile	...	...	...	...	...	...	20 0 0
...	...	...	...	...	...	...	20 0 0
H. W. Leeming, Ercand	...	...	...	...	...	...	10 0 0
...	...	...	...	...	...	...	20 0 0
J. H. Browne, Sallebile	...	...	...	...	...	...	20 0 0
...	...	...	...	...	...	...	20 0 0
J. Chas. Large, Ercand	...	...	...	...	...	...	20 0 0
...	...	...	...	...	...	...	100 0 0
H. G. Arnold	...	...	...	...	...	...	100 0 0
Mrs. C. Courpalais, Kulhatty Estate, Mysore	...	...	...	...	...	...	100 0 0
'Planting Opinion'	...	...	...	...	...	...	100 0 0
Total Rs.	...	...	...	5,628	2	0	

CERTIFICATE OF THE TREASURER, I. F. C. R. FUND.

The following letter certifies that the above sums were duly received by the Hon. Treasurer of the Fund referred to:—
copy.] MADRAS, 16th September 1897.

THE SECRETARY,

UNITED PLANTERS' ASSOCIATION OF SOUTHERN INDIA,
Madras.

DEAR SIR,

I have received your favour of 14th instant, enclosing a detailed list of subscriptions to the Indian Famine Charitable Relief Fund (Madras Branch) received through the medium of your Association, and beg to inform you that the total amount thereof, viz., Rs. 5,628-2, has been duly received by me and placed to the credit of the Fund.

I am, dear Sir,

Yours faithfully,

(Signed) GEORGE G. ARBUTHNOT,
Hony. Treasurer, I. F. C. R. Fund.

P.S.—The list is returned herein.

LETTERS TO THE EDITOR.

ANSWERS TO CORRESPONDENTS.

["A. L. WHADDON." The whole question of domesticating bees in coffee plantations was discussed in these columns early this year. A complete file of the 1897 volume up to date may be had on applying to the Manager, Madras. If, after consulting the articles and correspondence referred to, you desire further information, kindly write us again. "M." We quite agree with you that a great deal more than a "mere analytical expert" is needed for planting requirements, but it is obviously impossible to engage the services of a complete scientific staff. The class of man the U. P. A. intend getting out is, we understand, an Agricultural Chemist, who should certainly be able to afford the latest scientific information regarding nitrefaction and the mechanical texture of soils.—ED.]

FLIES!

DEAR SIR,—Can any of your readers tell me of any stuff that keeps away flies?

The flies are a perfect nuisance in my bungalow. Is it the flies in monsoon making the rooms hot? Perhaps "Planter's Wife" can assist me to get rid of the flies?

MUDGERI,
6th September 1897. }

"NORMANTON."

THE RAILWAY FOR THE MYSORE AND COORG COFFEE DISTRICTS.

I.

A CORRECTION.

SIR,—Kindly note the following correction in article on this subject which appeared in your issue of the 4th current. The last sentence of the third para. should read as follows: "If the line starting from Hassan followed a trace by Arkulgoode, Ramnadpur, Periapatam and thence to Sidapur, it would skirt the eastern boundary of North Coorg and come fairly within easy reach of the estates in the southern portion of the Mysore planting districts." The part in italics instead of "South Coorg"; an inadvertent slip, which perhaps many readers will have noticed who are acquainted with the localities. And besides, seeing the line was to pass through South Coorg, the mention of that district was superfluous. The papers being late in reaching me, I am only able to make the correction now.

I am glad to see you invite remarks from men in the districts interested, and hope it may elicit the views of many who know the line of country. As you indicate, it would be a very great advantage if the Mysore and Coorg men could combine in advocating a scheme that would serve both. It would add greatly to the importance of any representations they might make to the Government. The Resident of Mysore being also Chief Commissioner of Coorg, their representations would have the advantage, too, of being submitted through the same officer.
"STEAM."

II.

SIR,—I have been greatly interested in the communications made to your paper on the "Coorg Railway" by "Steam," as whoever that gentleman is, he appears to me to have a thorough grasp of the subject, and his views to a considerable extent coincide with those that the Malabar Chamber of Commerce have consistently expressed.

So far as the port of Tellicherry is concerned, it is not necessary again to reiterate the many advantages it possesses over others on the Coast, as these are patent to all who know anything about the ports in question.

The Madras Railway commences the construction of its extension from Calicut to Cannanore on the 1st October, and as the work is to be expedited, it is anticipated that Tellicherry will be in communication with the rest of India by rail in two years time.

It has already been laid down by the Government of India that it is not necessary for a Railway to open a branch line on its own gauge, and there is nothing to prevent the Madras Railway constructing the line advocated by "Steam" from Tellicherry to Kadur on the metre-gauge beyond the fact that the Southern Mahratta would desire to do it.

What we in Tellicherry complain of is, that the cost of the ghaut section of a Railway to Coorg has been condemned as prohibitive without any survey having been made. We are told that the cost of the ghaut section of the line, as surveyed between Munzerabad and Mangalore, is such as to render it entirely unlikely that that line will even come under consideration for another ten years, and yet those who know something about both lines of country assert that a trace could be found down

from Coorg to Tellicherry considerably easier than that from Munzerabad to Mangalore.

The Coorg Planters' Association, in their laudable eagerness to get a Railway into their district from any quarter, have latterly been inclined to throw over their old love Tellicherry, and to court the later proposal of a line from Hassan to Sidapur. The idea of the traffic on such a line paying its own expenses, and in addition contributing in any appreciable extent to the success of the Arsikeri-Mangalore line, was ridiculed by a gentleman who is well competent to speak on the subject.

Personally, I was of an opinion that there was ample room for the Arsikeri-Mangalore line and the Mysore-Coorg-Tellicherry line, but as I now understand there is only the chance of the Government of India sanctioning one, at any rate for many years to come, I would ask those concerned whether it would not be better to unanimously adopt such a scheme as "Steam" has proposed, which is more likely to be taken up by the Madras Railway or Southern Mahratta Railway, now that the former are extending to Tellicherry, rather than wait for a line which we are told is not likely to be considered for another ten years.

TELLICHERRY, }
6th September 1897. }

RALPH TATHAM.

SUNDIALS.

SIR,—In P.O. for June 12, p. 377, an article on sundials is given.

In low latitudes, where the sun rises and sets nearly vertically, a very accurate method of getting east, west, and north points is to work it out by the following formula: Sine declination $\times$ secant latitude = sine amplitude. If you have a good horizon, this will give good results. But the best thing is, take an amplitude at sunset and lay off the west point from it, and 90° from west will be north or south. Next morning take an east amplitude, lay off east point, and north from it, and if there be a slight difference between north laid out from east and west, take the mean of the two. But care must be taken that you have correct declination. The declinations given in Nautical and Whittaker's Almanacks are for Greenwich at noon. For example, the declination on 19th September will be $1^\circ 16' 51''$. At Coonoor it will be noon about 5 hours and 8 minutes before Greenwich noon, and as the sun will set about 6 hours and 2 minutes o'clock, or about 54 minutes after Greenwich noon, the true declination at sunset at Coonoor will be $1^\circ 15' 58''$ or $1^\circ 16'$ nearly. Next morning the sun's declination at Coonoor at sunrise will be $1^\circ 4' 18''$ or $1^\circ 4'$ nearly. Latitude of Coonoor from the map is about $11^\circ 0'$ north. Declination being also north, sun's amplitude at setting on 19th September at Coonoor will be $1^\circ 17' 25''$ north of west point. Drive in two pegs in line with the right and left edges of sun's disc. A point half way between will coincide with sun's centre. From this lay off a point $1^\circ 17\frac{1}{2}'$ to south. This will be true west very nearly, and 90° from it will be north. In the same way at sunrise on 20th September put in a peg coinciding with sun's centre, and from it lay off a point $1^\circ 5' 12''$ (which is sun's amplitude) to south. This will be true east very nearly, and 90° from it will be north. If it differs from north of previous evening, take a mean. In Chambers' Tables, pp. 414 and 415, will be found a table of amplitudes worked out to nearest minute for every degree of lat. and decln., and on next two pages is a table for finding sunrise and sunset according to apparent or solar time to which equation of time must be applied to get local mean time or clock time. These tables are explained at the beginning of the book, and the methods of computing them are explained in works on Navigation and Nautical Astronomy, and in Chambers' Mathematics, equation of time is given in the Almanacks for every day, and varies slightly from year to year, becoming practically the same every fourth year.

For those who can't get an angular instrument, the simplest

plan is to get apparent local time by sunset and sunrise to or better still by going to the nearest telegraph office, get Madras time and applying a correction for difference of latitude equal to 4 minutes for every degree, which, in the case of Coonoor would be about 16 minutes behind Madras. To apply equation of time to get apparent time. Having got suspend a plummet, and at any time A.M., say 11 o'clock mark its shadow. Do so at 12 o'clock apparent noon as a check. Again at an equal time P.M., or 1 o'clock, mark the shadow. A line bisecting the angle of the A.M. and P.M. lines should coincide with the line marked at apparent noon. This will be true north and south line. To this set the gnomon or stile of the dial.

In getting time from a table of sunrise and sunset, a further correction of 2 and sometimes 3 minutes is needed for refraction which makes the sun appear before time at rising and after at setting. At high altitudes above 5 or 600 feet the sun appears still longer before and after. At from 600 to 800 feet elevation the difference is 2 minutes, at 1,600 or 1,700 feet it is 3 minutes, at 3,200 ft. 4 minutes, at 5,000 ft. 5 minutes, at 6,600 to 7,000 ft. 6 minutes, at 9,600 ft. 7 minutes, and at 13,000 ft. 8 minutes.

A. HARRIS.

SCIENTIFIC AID FOR PLANTERS.

DEAR SIR,—So my brother planters have arrived at the conclusion that the investigations of the morphologist lead to no result of any real practical value. Query: Would the observations of the physiologist or biologist prove equally valueless?

Of course, it would take a most experienced and skilful physiologist to investigate that condition of the chlorophyll corpuscles which would appear to constitute a congenial medium for the propagation of leaf-disease. Probably the great deficiency of starch-forming corpuscles in the leaf of disease-haunted bushes would become evident, and the whole process of assimilation would have to be traced out. It might even be found that the history of leaf-disease is really the history of bankruptcy. That is to say, that owing to a sad deficiency of healthy foliage on the bushes, at that period of the year when the principal function of the bush is to lay up on its tissue a store of reserve material to draw upon for its initial requirements the following spring, the poor coffee bush had to struggle for active life again without anything placed to its credit at the commencement of the next growing season.

That period when the bush is most active in laying up a store of reserve material should be in the autumn, or just after coffee time. Planters know only too well the usual state of the foliage on their bushes at that time, and the inability of the bushes to fully ripen the final remnants of crop indicates their exhausted condition and consequent unfit state for carrying on the important function of laying up a reserve of food-material for the requirements of the ensuing growing season or spring. It may probably be found that the history of leaf-disease is *practically* the result of a long history of unobserved deterioration in vitality of the coffee bush. Every planter knows that a long season is inimical to the spread of leaf-disease, whereas a prolonged wet season favours its development. The explanation of this would probably be found in the fact that the absence of leaf-disease in dry weather is the result of the processes of metabolism being then at a stand-still, whilst the impoverished treasure being replenished with sorely needed addition of reserve-material. During the wet season, however, metabolism never ceases and the leaves become poisoned with the products of mal-assimilation which constitutes a favourable feeding-ground for leaf-disease. A thorough investigation of the proteids would probably make this very clear.

The practical question for present consideration would, therefore, seem to be: "What form or strength of nourishment would enable the debilitated coffee bush able to assimilate *normally*?" For must bear in mind that plants do not feed or exercise their

tion in the automatic manner of machines! There is an indispensable equilibrium of inter-defence in all the functions of life which when once destroyed by the undue forcing of function at the expense of the others, it becomes the work of to restore. Seed-bearing is only one of the vital functions of the coffee-bush, and as the planter finds it to his interest to stimulate the function of reproduction, he must at the same time mean to maintain the efficiency of all the other functions of the plant, otherwise mal-assimilation will result, leading to disease. Analogically, when the bacillus of consumption attacks the lungs, the usual forms of nourishment are no longer of avail, and resource is had to such special form of food, &c., as cod-liver oil to check mal-assimilation and destruction of healthy tissue. The task of the coffee-planter at the present time would, therefore, seem to be to adopt such methods as would tend to restore the normal function of healthy assimilation in the coffee bush. What aid of practical value can the physiologist afford in this important matter?

M.

It is very encouraging to be told that all the expensive manuring operations may only go towards feeding leaf-disease owing to retarded assimilation in the coffee-bush!!

COFFEE.

Market.

There has been a good demand, and prices have either maintained their value or are rather dearer, says the *P. M. Review* of the ultimo. The better qualities have been in most demand, and anything at all coloury has sold at full prices or at a slight advance. Some parcels of Guatemala imported early in the season, when there was little demand and now cleaned, sold at very full prices, probably higher than they would have fetched when first imported. Several parcels of East India, which had also been kept back, realised fully 5s. more than they would at the time of importation, the bold sizes showing even a greater advance. Coffee from Grenada and similar qualities have also sold at full prices. Plantation Ceylon and Mountain Jamaica fully maintain the high prices recently current. A consignment of choice Native Ceylon reached extreme rates. In the principal market the heavy receipts have continued to depress values, and quotations are about 6d lower than a week ago.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended Aug. 14, 1897.	Tons. 240	Tons. 273	Tons. 503	Tons. 297	Tons. 13,096	Tons. 10,588
For the 32 weeks ended Aug. 14, 1897.	9,027	9,235	13,667	14,177	...	...

manuring.

The Mysore planting correspondent of the *Madras Mail* of 9th inst. has decided exception to the Pringlean system of bulk manuring immediately after the S. W. Monsoon. The argument in favour of the practice is of course the danger of the manurial constituent being washed out of manure applied before the monsoon; but this, the *Mail* correspondent affirms, has not been observed with regard to cattle manuring, how-

ever real the danger may be for soluble chemicals. On the contrary, he has often noticed that post monsoon manuring resulted in the manure remaining absolutely inert till the following rains, unless frequent rains fell in the interval. This can be explained by the fact of the comparative insolubility of cattle manure, unless loaded with moisture.

COFFEE CULTIVATION WITHOUT MANURE.

CATTLE MANURE AND LEGUMES.

[This is no reply to "H. G. R.'s" strictures, to which I shall attend later on.—B. N.]

If there are any non-believers in the scientific accuracy of the theories propounded in "Coffee cultivation without manure," the following extracts from Messrs. Sutton's Farmer's Year Book for 1897 will probably convince them that growing coffee under leguminous shade is thorough scientific modern agriculture.

Messrs. Sutton & Sons on Legumes. Messrs. Sutton and Sons write: "According to recent bacteriological experiments, it seems probable that in the near future, by a regular

system of leguminous cropping, we may be able to dispense almost entirely with costly nitrogenous manures." There is, I suppose, no firm who have done so much for agriculture in England in the way of growing and establishing improved and disease-resisting varieties of cereals and vegetables, or who are now competent of expressing an opinion in connection with any agricultural discovery. That such a firm should have thus practically endorsed "Coffee cultivation without manure" will, I am sure, be regarded with satisfaction by all growers of *E. Lithosperma* as proof positive that they are in the very van of progressive agriculture. It is, I think, a great pity that there is no firm interested in tropical agriculture in the same way that Messrs. Sutton's are in European agriculture. In default of private firms, I cannot conceive that Government money could be more usefully employed than in growing and experimenting with cultivated products, in the praiseworthy endeavour to evolve disease and blight-resisting types. Nothing could be of greater importance to an agricultural country like India, and it has in my humble opinion been greatly neglected to the detriment of numerous industries, of which coffee planting is perhaps one of the most striking examples.

Potato cultivation is, on the other hand, an example of what has been done by careful selection in producing disease-resisting varieties; but with coffee we are unfortunately handicapped by the apparent impossibility of obtaining seed from any country that is not liable to leaf-disease. Whether the scientist exists who can give the death-blow to *H. Vastatrix* is problematical, but it is devoutly to be wished that he may soon be discovered; but in the meantime until he is unearthed, the only known way of fighting disease is by manure, and I hope to be able to demonstrate to proof that green manures are the cheapest, and they have the additional

advantage of being in unlimited supply. What is cattle manure but a green manure in another form and a very expensive form? I believe there is a prevalent idea that grass converted into dung is of greater manurial value than grass would be without being passed through the bodies of animals. That this is a fallacy is obvious, for the excretæ weigh less than the food the animal consumes, and there is a loss of the valuable constituents in passing through. All the nitrogen in the blood, flesh, hair and bones is extracted from the food they eat; the valuable ash constituents of the bones are similarly obtained. The cattle manure produced is plainly the balance of the food the animal eats after providing for its growth and nourishment. Hence it follows that where cattle are kept for manure, old cattle make the most valuable manure, as they require less nitrogen and phosphates than young growing animals do for their sustenance and growth. If cattle were leguminous a good deal might be said in their favour, but as they are not, and as they depreciate in manurial value everything they consume, the practice of feeding them on poonac is reprehensible (unless there is a market for the beef so produced), as it is plain that the poonac is of more value as manure applied direct to the coffee than after toll has been levied on it to nourish the animal. If cattle are simply sent out to graze, they only act the part of grass carriers. Each head of cattle brings home about a cooly

methods obtaining in Assam, which might, for many reasons, be called the premier district of India, if not of the world. Hence the directions given are of great value, though in following them every allowance should be made by the planter in the widely differing districts of South India for their particular surroundings.

The style of treatment changes according to jât, elevation and climate. Also must be reckoned liability to hail, blight or drought. The chief if not only reason of pruning tea is to keep the sap in active healthy circulation, and by directing its channels over as wide a planting surface as possible. In India pruning is almost invariably done in winter; in Ceylon, the land of perpetual spring, tea is pruned either in the cold weather or the middle of the year. *No pruning should be done until sap has almost ceased to flow, i.e., when bushes have stopped flushing*: China first, Hybrids next, and lastly Indigenous. This point safe, the sooner the trees are pruned the better, as in the cold season they are storing up reserves of food which should not be wasted by removal through pruning. In Sylhet pruning is done late, as hailstorms are prevalent when the early pruned bushes would have recommenced flushing. In Chittagong, or other hill districts, such as the Nilgiris, very early pruning must be avoided owing to frosts. In the Dooars late pruning is also necessary owing to droughts in spring. In other districts blights induce the same procedure.

So that practically early pruning has many disadvantages, one of the chief being that early pruned bushes give most of their crop in spring, when the flush is invariably poor, and also "shut up" early in the year. In heavy pruning, *i.e.*, almost down to the ground, especial care must be taken that the young shoots may have a good chance of remaining uninjured. For damage done at this stage may be impossible to remove for many years, *i.e.*, till the bushes are heavy pruned again.

The age at which young plants are pruned varies from two to three years, or is regulated according to the growth. In Cachar and Assam tea is pruned when 3 to 4 feet high, in the Dooars when 5 to 6 feet. In Assam a frequent rule is to cut down as soon as possible to 6" or 9" all young plants that have struck well after transplanting. In Chittagong to prune to 13" all fairly thick stems three years from seed; in the Dooars to 14" in the first, second or third year. An explanation of these different systems is almost impossible.

On a good free soil with plants raised from sound seed, pruning would go by girth of stem. On poor soil, and with plants from poor seed, early pruning would be necessary to overcome defects of growth. Young bushes are usually pruned upwards, *i.e.*, above previous years prune for some years; when downwards, *i.e.*, under previous years, cut until the hard wood is reached, when a low prune is a necessity. In this last a sloping cut to prevent lodging of water is a necessity. The sap should also be quite dormant, else great loss by bleeding will ensue. Good deep cultivation and manuring is also necessary. Sometimes heavy-pruned bushes run for two years, to allow formation of good wood for next pruning. To revert to the first prune. Cut the main stem down only, and leave or tip the side branches. The great thing is to encourage diameter of bush. Next year cut down to 18" or 2 feet. All damaged or dead wood of any kind should be cut clearly off.

The lowest straggling branches should be removed annually, as they yield no leaf and encourage seed, and last stops flush seriously.

With the many stemmed China prune harder and at a much lower level. Fairly late pruning is best, ensuring a continuous flushing through the season, early prune induces great rush of leaf in spring and great abundance of their weak wood and consequently cessation of yield.

All knives and saws should be kept very sharp, as tools mean torn bark and split stems. It is a good idea to keep a cooly solely for sharpening the tools for a dozen men or less pruning.

To remove the prunings, the usual method is to burn them. If done deeply and thoroughly, and while fresh, rich nitrogenous leaves give a valuable manure. If blight has been present, it is best to bury in specially trenches or burn.

DISTRICT ASSOCIATION.

LOWER PULNEYS.

PROCEEDINGS of Committee Meeting held at the Peryoor Bungalow, Lower Pulneys, on the 26th July 1897.

Mr. F. R. Gerrard was appointed Extra Committee Member for the Annual General Meeting.

Read letter from Mr. H. E. Somerville resigning his membership of the Association on leaving the District.

(1) COMMISSION OF ENQUIRY.—Read Circular dated 18th June, Circular dated 2nd June, and Honorary Secretary's reply, Circular dated 15th June; (2) Circular dated 23rd June and Circular dated 13th July.

Read report of Commission of Enquiry, and laid on the table copy of Act V of 1866.—Recorded.

(2) THE U. P. A. MEETING.—Read Circulars dated 29th June, 11th June, 26th June, 28th June, 30th June, and Agenda for the U. P. A. General Meeting to be held at Bangalore on August 1st.—Recorded.

Mr. Howard Newport, the Honorary Secretary, is unanimously elected to represent this Association at the U. P. A. Meeting.

(3) THE DINDIGUL-POTHANUR RAILWAY.—Read letter from H. P. Hodgson, dated 12th July, and laid on the table report proposed Dindigul-Pothanur Railway Extension, dated June 1st, kindly forwarded by the Traffic Manager, Madras Railway, covering letter, in reply to Honorary Secretary's queries, were in accordance with the Resolution passed at the Committee Meeting of May 1st.

Mr. W. H. Gerrard said that he feared from what Mr. Howard had said in his letter just read, that the construction of this important Branch Line by Government had been indefinitely postponed. That Lord Wenlock had promised that the Dindigul-Pothanur Branch Railway would be almost one of the first Railways to be taken up. He noted that "Railways" had not been mentioned in the preliminary Agenda of the U. P. A. Meeting though already been circulated, but that he hoped the U. P. A. was going to omit this most important subject of Railways at its next Meeting. He moved that our Delegate bring up this subject if possible, at the Meeting, and urge its undoubted importance that it be commenced without delay.—Carried.

(4) THE U. P. A. FINANCES.—Read Circulars dated 6th June, 13th May, 20th May, 9th June. Resolved that the suggestion by the Chairman, U. P. A. S. I., and the Honorary Secretary, Travancore P. A., with reference to North Wynad, is approved.

Read Circular dated 18th July. Resolved that the Treasurer approves of the expenses *re* Act XIII. of 1859 being debited to the Reserve Fund, if sufficient funds are not forthcoming for the year included in this year's balance sheet.

(5) THE U. P. A. INDIVIDUAL MEMBERSHIP.—Read Circular dated 28th May, 9th June, 10th June, 14th June, Telegram dated 12th June, letter from Chairman, L. P. P. A., dated 16th June; and Proceedings of the Central Travancore P. A. Resolved that

iation approves of Mr. Acworth's last scheme, but Delegate is a free hand to vote as he may think most in the interest of district and Association after hearing the subject discussed.

THE U. P. A. REGISTRATION.—*Read Circulars dated 22nd May and 9th July. Resolved* that this Association is of opinion that registration of the Parent Association would be advisable, even if it be found necessary to register District Associations at the time. Delegate is instructed to vote accordingly.

ADDRESS TO THE QUEEN-EMPRESS.—*Read Circulars dated 1st, and 29th May; 19th June and 6th July.—Recorded.* The Delegate was requested to bring up again, if he thought advisable at meeting, the suggestion of the Association that the cost of the photograph and Address should be met out of the funds of the District Associations. The amount per vote would not amount to much and would relieve the U. P. A. current expenses of a heavy item. *Resolved* that the larger copy of the photo of the casket received and hung up in the place the Association generally meets and that if the photo is copied into, or articles relative to the photograph appear in any of the English Illustrated papers, the Association purchase copies of that paper.

SCIENTIFIC INVESTIGATION OF LEAF DISEASE.—*Read Circulars dated 12th May, and 18th and 27th June. Recorded* that this Association is in accord with what Central Travancore and Wynaad said on the subject, and the Delegate is instructed to vote against the expenditure of U. P. A. Funds in this matter.

MALARIAL PARASITE.—*Read Circulars dated 12th May and 9th July. Resolved* that if possible copies of Surgeon-Major paper be obtained and circulated before an opinion is recorded.

ACT XIII. OF 1859.—*Read Circular dated 16th July. Laid on the table Planting Opinion of date 17th July.—Recorded.*

ACT VIII. OF 1878.—The Honorary Secretary said that he had been informed that a case brought by the police against a Chetty selling coffee on the plains and keeping no books was decided in favour of the Chetty by the Magistrate hearing the case, the Chetty's defence being that he was a "Planter" and therefore need not keep no books. In this case the Chetty was avowedly a merchant and disposed of coffee both by wholesale and retail, but because of 5 or 20 trees that he owned on the hills he claimed, and his case was upheld by the Magistrate, that he need show no accounts and keep any record of his sales of coffee. *Resolved* that the Delegate bring this point up if possible during the discussion on Coffee and Tea.

THE AHTOOR-KODAIKANAL GHAT ROAD.—*Read* letters from Hon'ble Mr. H. P. Hodgson, dated 12th July, and 14th July (enclosure).—*Recorded with satisfaction. Resolved* that the Association request the permission of that Government to allow this matter to stand over till next year, for being the present financial tension due to the famine; we do not think Government are likely to make any allotment for the construction of our Ghat road this year, and we would rather therefore bring the matter up later when our statistics and remarks may be of use before Government at a time when they may more readily see the way to making the grant and putting in hand the construction of the road.

LADY-BIRDS AND COFFEE BUG.—*Read* letter from the Hon'ble Mr. H. P. Hodgson, dated 12th July. Circular dated 5th July and *Planting Opinion* of date 10th July.—*Recorded with satisfaction.* Delegate is instructed to vote in favour of any measure that supports the suggestion of Government for the engagement of an expert, and to allow him to further the suggestion of the experimental importance of some specimens of Lady-birds from Australia.

"PLANTING OPINION."—*Read Circular dated 15th June. Resolved* that this Association approves of this paper being made the medium for the circulation of notices and other U. P. A. matters and that it deserves the support of Planters.

THE VIRUPATCHI POST OFFICE.—*Read* letter from the Superintendent of Post Offices, Trichinopoly, dated 13th July, stating that letters have been issued to place the Post office in question at once in charge of a person who can read and write the English language. *Recorded with satisfaction.*

THE ANNUAL GENERAL MEETING.—*Resolved* that the Annual General Meeting be postponed till after the 1st September. Date to be fixed later on.

ANTWERP AS A MARKET FOR COFFEE.—*Read Circular dated 1st July.—Recorded.*

U. P. A. PROCEEDING BOOKS.—*Read Circular dated 1st July. Resolved* that the Association purchase copies of the U. P. A. Proceeding Books.

(19) STATISTICS.—*Read Circular dated 24th June. Resolved* that as all the statistic forms have not yet been returned by the members, the Honorary Secretary fill in those that he has received and copy the rest from last year's list, and take the statistics with him to the U. P. A. Meeting.

Laid on the table.

Proceedings, Coorg P. A. Annual General Meeting, 31st May 1897.

" Wynaad P. A. of 19th May and 9th June.

" Shevaroy's P. A. Committee Meetings of March, April and May.

" Shevaroy's P. A. Quarterly General Meeting of April 19th, 1897.

Committee Members. { W. H. GERRARD (Vice-Chairman).
F. R. GERRARD.
HOWARD NEWPORT (Hon. Secretary).

IF SURGEONS DISAGREE AND PHYSICIANS COINCIDE NOT,
THEN WHY NOT TRY
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AS BEING

A sure and certain remedy for Rheumatism, Neuralgia, Lumbago, Sciatica, Muscular Stiffness and other Articular and Nervous Complaints.

Sold in pots, 12 Annas.

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PHARMACISTS,
MOUNT ROAD, MADRAS.

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THE OAKLEY CYCLE CO.'S DEPOT,

St. Mark's Road, South Parade.

CYCLES ON SHOW AND FOR SALE.

MAKE.	Model.	Tyres.	Price net cash.	Gear.	Weight.
GENTLEMEN'S			rs.		lbs.
Ramblers (American).	No. 15	G. & J. pneumatic	400	72	26
Premier	S.	D. T. pneumatic.	315	66	34
Premier	R.	Do.	300	74	29
Royal Lagle	No. 4	Do.	279	60	34
Scarsdale	No. 1	G. & J. pneumatic.	250	60	32
Oakley	No. 1	Warwick.	250	60	31
Swift	Popular	Cushion.	275	60	35
Premier	S.	Do.	275	63	35
Premier	R.	Do.	260	66	29
Scarsdale	No. 2	Do.	175	56	34
Oakley	No. 3	Do.	140	60	35
LADIES'					
Singers	de Luxe	D. T. pneumatic.	425	56	31
Premier	H.	Do.	315	56	34
Rudge Whitworth	Standard	Do.	315	56	32
Oakley	No. 1	Cushion.	225	56	31
Scarsdale	No. 2	Do.	175	56	34

MARKET SUPPLEMENT.

SATURDAY, SEPTEMBER 18, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (August 27, 1897) says:—Auctions have again been on a limited scale and the small supplies meeting a steady demand; last week's values were in most cases well maintained.

About 700 bags East India were offered, consisting chiefly of native and cherry-dried descriptions, in small lots, which sold slowly at irregular rates.

Central American kinds were offered only in small quantities and colory grades were easily disposed of at full prices, whilst commoner sorts were unchanged but slow of sale.

Futures were easier during the week on very large Brazilian receipts, but the market was firmer yesterday on better advices from Brazil, and prices show a recovery of about 6d.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending August 25th, 1897, says:—Bank rate 2%. Bombay Exchange closes at 1s 3½d. Brazil Exchange 8½d. Rupee paper 3½%. 63½. Silver 23½d per oz.

There is no change to report on the spot, most qualities selling at about previous values. Brazil markets are very steady, considering the enormous Rio and Santos receipts, which have averaged 21,857 bags in Rio, and 37,000 bags in Santos.

The sales included:—53 casks and tierces 18 barrels and bags Plantation Ceylon sold from 78s to 113s. Of 809 bags 20 cases East India 601 bags Coorg native character sold from 64s to 75s, 143 bags Neilgherry at 65s to 103s, 65 bags Wynaad part sold at 86s 6d, and 20 cases Travancore bought in; 50 barrels 10 bags Jamaica part sold at 51s 6d to 107s 6d; 937 bags Guatemala chiefly sold at 52s to 106s 6d; 144 bags Costa Rica 57s 6d to 73s; 1,457 bags Nicaragua part sold at 9s to 62s 6d; 587 bags Salvador chiefly sold 53s 6d to 56s; 177 bags Mexican 68s 6d to 97s 6d; 230 bags Vera Paz and Coban chiefly sold at 74 to 103s; 2,535 bags Columbian good part sold at 48s to 100s 6d; 136 bags Bolivian 65s; 69 bags Venezuelan bought in; 320 bags Guayaquil part sold at 50s 6d; 147 bags Peruvian part sold at 54s to 57s; 200 bags Nyasaland 60s to 100s; 33 half-bales Mocha bought in; and 43 bags Liberian Travancore sold at 36s.

Futures have fluctuated but little during the past week, and close quiet, with quotations unchanged to 3d lower, viz.:—Good average Santos in Havre, September delivery, fcs. 43.25, in Hamburg pf. 35, and No. 7 low ordinary Rio in New York \$6.45.

To-day's London official quotations are:—

	Aug.	Sept.	Dec.	March	May
Rio ...	33/6	34/-	34/6	—	—
SANTOS ...	34/9	34/9	35/6	36/3	36/6

We quote:—

Ceylon, mid. to good mid. 101/@106/	Costa Rica, mid. to fine... 83/@109/
Do. small to low mid. 80/ „ 100/	Do. ord. to low middling. 60/ „ 82/
East India, mid. to good mid... 89/ „ 103/	Jamaica, good to fine ord. 52/ „ 66/
Do. small to low mid. 74/ „ 88/	Do. greenish to fine colory... 74/ „ 125/
Guatemala, mid. to fine... 79/ „ 104/	African ... 30/ „ 32/
Do. good ord. to low mid... 60/ „ 78/	Columbian, ordinary ... 48/ „ 53/
Salvador, good ord. foxy greenish... 57/ „ 58/	Do. good ord. to low mid... 54/ „ 78/
	Do. mid. to fine... 79/ „ 98/

Receipts in Brazil compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
Rio ...	849,000	612,000	450,000
SANTOS ...	1,380,000	965,000	621,000
	2,229,000	1,577,000	1,071,000

Prices realized at auction for the principal Marks of East India:—

	1	2	3	PB
Coorg	75/-	69/-	64/-	78/6
Native		bid		
"	73/-	68/-	64/-	76/-
"	bid	bid		
"	74/6	68/-	64/-	76/-
"		bid		

Landed last week ...264 tons. Deliveries ...725 tons. Stock ...12,63
Do. last year ...318 „ „ ...591 „ „ ...10,31

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea B dated August 27th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	169,132 packages.	344,662 packages.	12,320 packages.
1896-1897...	183,772 „	311,040 „	11,980 „
30,002 pkgs. INDIAN	Total 58,898 packages were offered in auction this week.		
27,957 „ CEYLON			
939 „ JAVA			

The following table giving the distribution of the exports of Tea Ceylon for six months ending 30th June, 1897, 1896, 1895, is interesting as it shows that, almost without exception, each country that previously been using Ceylon Tea in appreciable quantity during the period in 1895 and 1896, required an increased supply in the first months of 1897.

Exports from Ceylon from 1st January to 30th June, during the years 1897, 1896 and 1895.

	1897.	1896.	1895.
United Kingdom	50,132,235	48,897,533	45,500,000
Austria	1,755	28,714	
Belgium	5,895	19,147	
France	45,066	37,726	
Germany	144,696	45,075	
Holland	14,505	3,889	
Italy	3,400	6,777	
Russia	176,257	165,657	
Spain	9,100	29,800	
Turkey	4,220	10,692	
India	349,853	539,315	
Australia	6,419,361	5,751,452	
America	423,877	262,238	
Africa	111,787	45,264	
China	259,705	86,603	
Singapore	13,401	43,377	
Mauritius	—	48,884	
Malta	39,110	67,800	
Sweden	25,140	—	
Total lbs.	58,179,363	56,089,943	51,600,000

Indian. The market generally has been steady, good Teas continue in strong demand; in occasional instances some of the less desirable parcels of whole leaf Tea about 7d. per lb. were rather cheaper. The Darjeeling Tea placed upon the market this week has shown improved quality, and as such kinds are much wanted some very satisfactory were made. The 2,336 packages of Darjeeling Tea sold on account this week realised the high average price of 1/2¼ per lb.

SUPPLEMENT TO "PLANTING OPINION."

Tea's av. of Tea sold on Garden Account, 1897, 20,595 pkgs.,
av. 9½d. 1896, 24,497 pkgs., av. 9½d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
and Sylhet..	8,386 p 11¼	10,909 p 11½	42,609 p 11¼	51,725 p 11¼
gong	4,315 p 6½	7,607 p 7½	23,824 p 6½	33,241 p 7½
Nagpore	100 5¼	32 4¾	331 p 4½	172 5
ling	2,336 p 1½	1,858 p 10¾	14,089 p 10¾	11,503 p 11
s	3,485 p 7½	3,561 p 7¼	13,626 p 7¾	14,974 p 7¾
a, &c.	221 p 7½	192 p 7¼	1,765 p 6¾	1,201 p 6¾
erry	116 b 8½	— —	1,281 p 7	503 p 6¾
ncore	407 p 7¾	306 p 6¼	1,223 7½	957 p 6¾
	1,229 p 6½	32½c 5½	10,678 p 6¼	5,969 p 7½

Tea sold on Garden Account 1st June to date 1897, 109,826 pkgs., av. 9d
120,841 pkgs., av. 9¾d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
(Fair ordinary, dark liquor)	3¾d	4½d	4½d	4d
(Red to brown, strong rough liquor)	4½d	5d	4½d	4½d
(Brownish to blackish, strong liquor)	6½d	7½d	6d	6¾d
(Blackish greyish, useful liquor).	7d	7¾d	7d	7¾d

	1897.	1896.	1895.	1894.
PEKOE. (Greyish to blackish, some tip, useful liquor)	8¾d	9¾d	8d	9½d
PEK. SOUG. (Blackish greyish, inferior liquor).	5½d	5½d	5½d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor)	6d	6d	6d	6½d

Ceylon. The market continues to harden but no decided all round advance has taken place, the average still remaining at about 7½d. per lb. This compares with 8d. last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 755,273 pkgs., av. 7¾d. 1896, 685,931 pkgs., av. 8¼d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor).	6½d	6½d	6½d	6½d
PEKOE (Ordinary leaf, little twist; fair liquor)	7½d	7½d	8d	8d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5d	5½d	5½d	5½d
PEKOE (Somewhat bold leaf; indifferent liquor)	5½d	6d	6½d	6½d

Java. The number of packages brought forward met with fair competition, excepting in the case of some less desirable liquoring parcels for which only low prices could be obtained.

Bank rate 2 per cent. Exchange on London three months sight.—
Calcutta 1/3½, Colombo 1/3½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9½d.) August 27th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
gherry	116 b	8½	116 b	† 8½	...	...	...	...	...	...	...	...	...	...
h Wynaad	13 p	5¼	1	6½	6	5½	4	5	1	4½	...	...	1	3
anath	1229 p	6½	...	...	3	5¾	...	...	...	...	...	...	2 p	3
ancore	5 p	4¾	...	...	7	4¾	...	...	...	...	10	4½	3½c	3
akow	20 p	4½	...	...	47	5¾	31	7	20	5½	...	...	20 p	3½5
ccord	118 p	5¾	...	...	19	5½	...	...	...	...	10	4¾	...	...
more	29	5¼	...	...	4	3 5½	8	6½	3	4¾	3	4	6	3
on	88	5¾	...	...	51	5½	34	6½	...	...	2	4	1	3
ield	105	6½	10	7¾	30	6¼	27	7¾	21	5½	13	5	4	4
d T Co	41	5¾	...	...	20	6½	...	...	21	† 5½	...	...	...	...
haston	91 p	5¾	21½c	7½	43	4½5¾	8	6½	...	...	17	4½5	2	3½
mudi	167	6¼	20	7¼	87	6	30	7½	30	5½	...	...	...	...
Co Kuduwa K.	213	7½	156	7½8½	28	6½	...	...	...	...	...	...	29	3½6½
Travancore TCV.	125 p	6½	...	...	45	6¾	26	8½	29	5¾	...	...	25½c	3½
brook	131	6½	11	7½	81	5½6¼	19	8¾	13	5½	7	3¾	...	...
ardi	72	6½	...	...	15	6¾	19	9½	19	6	6	4	13	5½

Teas marked thus † are New Season.

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MIXTURES MADE FREE OF CHARGE. FOR QUOTATIONS AND FURTHER PARTICULARS,

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EVERY DESCRIPTION OF PLANTERS' REQUISITES STOCKED OR MANUFACTURED TO ORDER AT OUR

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MANUFACTURERS OF THE FINEST CIGARS AND CHERROOTS.

Maistries and Coolies' Coats in Dark Blue Melton, Rs.3-4 each.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

[No. 26.]

COONOR, SATURDAY, SEPTEMBER 25, 1897.

[No. 26.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for advertisements will be: 4 as. per line for the first, 3 as. for the second, 2 as. for the third and succeeding insertions. Five-line advertisements in Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been moved to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c. Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 1st October 1897.

Nellampathy, British.

22nd September.—*Weather.*—Rain for month to date 6.35, for year 149.56. Very little rain has fallen this month.

Most of the 6 inches fell the last two days, when 3.65 were gauged. There has been a lot of bright sunshine and it must have been fine growing weather for old coffee if somewhat trying for late plantings. N. E. Monsoon has not appeared yet, but it can't be long now if it's coming at all. Rice a shade easier, now 8½ edingallies, instead of 8 as before. Grain 11 measures. *General Health.*—Fair. *Labour.*—Enough for requirements, as works are few on most places this year. *Interesting Items.*—The Resident shot a rather good tusker, I hear.

Nilgiris.

SHOLUR, 21st September.—Five days with rain since last report. Weather cloudy and misty with insufficient sun for good flushes. Rainfall during month 3.01, making 45.73 to date. Highest and lowest temperature, between 6 A.M. and 6 P.M., 78° and 57° respectively. *Health.*—Good. *Labour.*—Plentiful. *Grains.*—Same as last week.

COONOR, 21st September.—Rain has set in with a "vim" since my last. Coffee ripening up fast. Tea flushes are a bit backward. No disease to speak of, thank goodness, save short crops and the Government exchange. May the blessings of all producers light on the heads of those instrumental in inflating the currency. Query: Is this criticism of measures, or of Government as a whole? For I wish it to be distinctly understood that I refer to the measure alone, as I don't appreciate accompanying the worthy editor on a lengthened visit to the Andamans. Labour more plentiful than ever, which is a good thing considering the beastly weather we are having. Just

heard of a rather rough experience for a local estate. Sent 2,500 lbs. tea down to the coast the other day; a fire in the Customs House, where the tea was lying, promptly destroyed the whole lot. That's one way of reducing exports!

TAPIOCA CULTIVATION.

THE present disastrous famine in India has again attracted prominent attention to the cultivation of the tapioca plant as an alternative food to rice or wheat. The plant endures all but the greatest extremes of temperature, and thrives even in arid localities where all other vegetation is parched and withered in times of long drought.

It is cultivated very extensively in South America, and somewhat in Travancore and Ceylon. In a recent number of the *Agricultural Ledger Series** is given an excellent description of the modes of cultivation in Travancore. Introduced by the Portuguese early in the 16th century at Goa, the Bitter Cassava: Manioc, Tapioca (for there are two varieties, the sweet and the bitter) has been cultivated on the West Coast ever since. It is in Travancore, however, that the cultivation has extended most, and the Malayali peasantry now consider it one of their most important crops. It is possible that, undertaken by Europeans, tapioca growing and milling for export might prove a profitable industry. Acting under this impression, we shall give a few notes on the manner of its cultivation. In the middle of the North-East Monsoon, the soil, which should be loose and friable if possible, is deeply hoed or ploughed over. It is then laid out in plots 2—3 yards square, raised a foot from the surface. Manuring is occasionally done with jungle soil, ashes or cattle-manure. For planting, stems of the previous year's crop are taken, cut up into lengths of 6—8 inches, rejecting all but the lower and more mature portions. A break in the monsoon is chosen for the planting, as the cutting might die in a poorly drained and saturated soil (hence hill sides are usually chosen for plantations), and 2—3 cuttings are put down in each plot, at a slant of 60 degrees or so, two-thirds of their length being covered. In ten days to a fortnight the cuttings will have struck and the young shoots will come vigorously in light green tufts of palmate leaves. In another month the side roots will grow, and usually in about to eight to ten months the crop will be ready to dig. They are allowed to remain in another couple of months, however, to provide the cultivator with fresh cuttings for the next planting season. If dug up sooner, and in dry weather, the fresh plantations must be well watered till they have struck freely. There is one variety that gives two crops, a hot weather and a cold weather one, the quality of the first being said to be superior to the latter. The hot weather crop rarely fails, except in extremely sandy or stony soil. The best soil is a well-drained, soft, sandy loam, with an admixture of humus. Clayey soils, like stony ones, are bad. Ashes or ashes and leaves form the best manure and add greatly to the yield and quality. Cattle manure increases yield but spoils quality.

A well-grown healthy root is generally about two feet long, three inches in diameter, and between six to eight

pounds in weight, usually thicker at the attached end tapering off to a fine point. The outer skin is thin, brown in colour, while a stout, tough white inner skin protects the delicate interior. On breaking the root across a compact view of dense fibrous tissue is seen to run through its length. The root contains the greatest quantity of farinaceous material in about ten to fifteen months after planting. Afterwards, if allowed to remain in the ground, it first grows woody and deteriorates into a soft spongy mass, the tough fibrous one being replaced by a narrow canal filled with a pulpy decaying fluid of grey cellular matter. The root seldom bifurcates, and even root fibres are few.

The hill cultivation is far wider, and the tapioca is planted by the hillmen as one of the ingredients of their curious hotch-potch fields of paddy, ragi, maize, chana, dāl and other seeds, in burnt clearings. When ready for use, roots are dug up, washed, peeled and cut up into small pieces, and dried by the sun on mats or rocks into white flinty chips known as *kani marachini* (the hill-man's woody potato). This hill tapioca is bartered for other produce on the plains, and is much prized by the plain inhabitants.

Some of the varieties of tapioca are very poisonous in their raw state, and must be boiled or dried repeatedly before use. Others are perfectly wholesome. Should the first be partaken of when insufficiently boiled, vomiting ensues, attended with severe pain in the throat and stomach, the patient gets drowsy and collapse follows. Sugar in any form accentuates the effects, while coconut oil, curds and tamarind juice act as vigorous antidotes.

Under the local names of *Marachini* (Woody Potato), *Kappa Kelangu* (Ship Potato), about seventeen commonly recognised varieties of the tapioca are cultivated in Travancore. But these are evidently only races descended from a few distinct varieties and differentiated through long and peculiar forms of cultivation, not to speak of the powerful influences of soil and climate. These races, proportionate to the bitter principle they contain, may be conveniently brought under one or other of two heads—*Avians* or *Boilables* and the *Maravans* or dark races. For purposes of study, the following classification has accordingly been found useful:—

I.—*The Avians or easily boilable kinds*, characterised by a little bitter principle:—

(a) *Pacha Avian* (green boilable).—Leaf-stalks pink along upper surfaces, but green beneath and at their origin with the stem; stems 2 inches in diameter, light green; average height 12 feet; flowers rare; roots pale red, large; average weight 15 lbs. each; manure after one year.

(b) *Cheenee Avian* (Potato boilable).—Leaf-stalks and stems yellow; stems delicate; usual height 5 feet; flower after one year; roots white, and, like the *Ipomea Batatas* (Sweet Potato) mature six months after the cuttings are put out; they start in delicate sprouts from the base of the stem, and develop a few inches beyond; average weight 10 lbs. each. This is also called *Vellary* (White boilable).

(c) *Chovalay Avian* (Red boilable).—Leaf-stalks and stems red; flowers common; roots small, light red, firmly attached to stems; mature in one year; average weight 10 lbs. each.

(d) *Curry Avian* (the Curry boilable).—Leaf-stalks and stems pink; delicate plants; usual height 4 feet; flowers common; light red, large; average weight 12 lbs. each; manure after one year; mealy and wholesome.

(e) *Chána Avian* (the Cow-dung boilable).—So called from

**Agricultural Ledger*, 1897—No. 4, *Manihot Utilissima* (Cassava, tapioca, manioc).

are usually used in cultivation. Leaf-stalks pale but red at the joints; stems red, usual height 8 feet; roots few, substance of the pulp arranged in two zones—the outer firm and farinaceous, the inner pulpy, and unfit for food; average weight 8lbs. each.

(c) *Chenkomban* (the Red-stemmed).—A variety resembling the tree Avian, but with the leaf-stalks and stems a bright scarlet.

(d) *Neduvengauden* (the Neduvengaud Tapioca).—So called from the name of that name in Travancore where it was first cultivated. Leaf-stalks pale pink; roots small but numerous; average weight 4lbs. each.

—The *Maravans*, or dark races, like the particular class of thieves of that name in the Tinnevely District. These are all more or less nauseous:—

(e) *Olley Karim Maravan* (the Dark Maravan).—Leaf-stalks deep green with purple streaks below the attachment of the leaf-stalks on the stem; plants delicate; flowers rare; roots mature in the year, few, deep brown, slightly nauseous; they are very lightly attached to the stem; average weight 10lbs. each.

(f) *Neduvalli-Kian Maravan* (a race whose roots take as firm possession of soil as the tenacious claws of the Neduvallior Iguana lizard).—Much-branched race with stem and leaf-stalk like *Olley Karim Maravan*; flowers common; roots few, woody, and have to be boiled before the bitter principle is removed.

(g) *Ana Maravan* (the Giant Maravan).—Leaf-stalks and stems like those of (a) in colour, but the stems are tall, thick, and strong, usually about 20 feet high; flowers rare; roots very large; average weight from 20 to 25 lbs. each, and take 15 months to mature; very nauseous, requiring to be boiled three times.

(h) *Kathelay Marachini* (Kath-elay, i.e., bitter-leaved).—Leaf-stalks like those of (a); stems pale yellow streaked with red; flowers common; roots small but numerous. The race was at one time widely cultivated, but it is now rare; nauseous like (c).

(i) *Koota Maravan* (the Dwarf Maravan).—Dwarfed, much-branched race, usually 2 or 2½ feet high; leaf-stalks and stems like those of *Kathelay Marachini*; roots lightly attached to the stem; very nauseous.

(j) *Ellavum Kappa* (Areca-like Potato).—Tall race like the *Ana Maravan*; stems and leaf-stalks dark red; roots thin and numerous, usually 25 to the stem; flowers rare; very nauseous.

(k) *Avanakkum Kappa* (the Castor-oil plant-like Potato).—Dwarfed, much-branched race, 4 feet high; leaf-stalks red; stems greenish-coloured; roots few, at most four, small; slightly nauseous.

(l) *Vellay Marachini* (the White Tapioca).—Leaf-stalks and stems green, tall, delicate, much-branched; usual height 25 feet; flowers rare; roots brown, lightly attached to the stems; most poisonous, the bitter principle being eliminated only after at least seven successive boilings; race growing extinct, being sometimes cultivated in North Travancore.

(m) *Olaven*.—Delicate, rare; stems small, 3 feet high, branched; flowers common; roots small, few; slightly nauseous.

(n) *Kili Vakay* (the Parrot-green Tapioca).—Stems and leaf-stalks light green; leaves few and far apart; usual height 10 feet; flowers common; roots large, few; average weight 12lbs.; slightly nauseous.

Of these races, the most nauseous, it will be seen, are *Vellay Marachini* and the *Kathelay*, both which, however, are the oldest cultivated, and are now becoming rare; that long cultivation has, in their cases, done comparatively little towards improving the quality of their roots. When left to themselves, and especially under cover, all these races grow into tall and lanky plants, which in time assume the nature of climbers, many of which are often thirty feet high.

With regard to the position the tapioca industry occupies in Travancore, it may be said to compare favourably with many another similar industry in that country. Much tapioca is exported, especially of late, and, judging from the increasingly extensive areas under it, the importance of tapioca cultivation as a profitable industrial pursuit is beginning to be realised every day. The tapioca has long since established itself as an important and excellent article of diet with the Malayali, and the recent steady rise in the

price of rice bids fair to make it one of the first staple food-stuffs for him, if it is not that already.

Apparently there is no export of tapioca flour at present from India, neither are there any mills for reducing the roots to flour.

Besides the bitter kinds of tapioca enumerated above, there are other sweet varieties that require no special preparation at all. These are the favourite sorts in South America, from where a stock of cuttings could be procured through the agency of our British Consuls.

To prepare the flour, the peeled root is grated on a common grater by a handwheel or one driven by machinery into a soft pulp. This, after the water is pressed out, is dried in copper pans and is the farina of commerce.

The yield varies from 5 to 10 lbs. a plant; if planted a yard apart, the crop comes from ten to twenty tons per acre.

GENERAL NOTES AND ARTICLES.

Yerba Mate, or Paraguayan Tea.

We have frequently drawn attention to this "tea" as being one of the lesser known of the "warm drinks" of the world. It will be news, though, to most of our readers to hear of the extent of the trade. Twenty million pounds of export is not bad, but as the price runs out to under 4d. per lb., the margin of profit is not likely to be excessive. Says the *H. & O. Mail*:—

In his last report to the Foreign Office, Her Majesty's Consul at Villa Asuncion has something to say about Paraguayan tea. He says: "There are two classes sold, but it is only in the manner of preparation that they differ. The kind known as 'Mboroviré' is merely dried over a furnace, and then beaten into small pieces with sticks. The 'Molda' goes through the same process, but is afterwards ground in a mill. The export duty on the former was increased in 1895 from 30c paper to 10c gold, and on the latter from 25c paper to 9c gold per 10 kilos. The revenue derived from this source in 1895 amounted to 471,668dols. (£16,845). The Yerba forests, called yerbales, were formerly the property of the State, but most of them have been sold, and are now in the hands of a few capitalists and companies. The Industrial Paraguaya Company, which owns about half of the yerbales known to exist in the country, exports annually about 400,000 arrobas (4,512 tons). The total quantity of yerba exported during the past year is estimated at about 9,024 tons, and the average price per arroba (25lb.) was 11dols 50c paper (7s. 8d.)."

Light Railways.

It would be well worth the while of the U. P. A. to procure authoritative information on the matter of light railways. As will be seen from the extract from the *Ceylon Observer* given below, the cost is about five times less for a 2-foot line than for a 3 feet 6 inches gauge, i.e., £2,000 compared with £10,000 per mile. The steepness of the Tasmanian district, through which the railway line runs should be especially noted. Our friend "Steam" might profitably employ his energy in working out the difference in cost of a 2-ft. line and the one he advocated for Mysore and Coorg. As everything is done nowadays on the "will it pay at once" test, it is easy to see that several cheap light railways might be constructed without demur, whereas a more expensive broad track would be shelved indefinitely:—

LIGHT HILL TRAMWAY IN TASMANIA.—We read of narrow-gauge lines in North-West Tasmania: from the coast to Zeehan (in the silver-mining district) a railway of 3 ft. 6 inches, 28 miles in length, cost £8,000 per mile; but beyond that for 17 miles through very hilly, broken country to N. E. Dundas, a tramway on a 2-foot gauge is being made for £2,000 per mile. The 2-foot line to North-East Dundas will probably be completed for £2,000 a mile, including sur-

veys, engines and rolling stock, while the engineers estimate the probable cost of constructing a 3 feet 6 inches gauge railway through the same country at £10,000 a mile. Excepting the first five miles, which are fairly level, the country traversed by the 2-feet line is very mountainous, rough and broken, and in several places very precipitous. The surveyors had to cut their way through the scrub to make the survey, which cost £103 per mile. At several points the mountains are so steep that it is difficult to keep a footing on the slopes along which the side cuttings have been made. The radius of the curves is from $1\frac{1}{2}$ to 2 chains. There are 300 such curves on the line which is to be $17\frac{1}{2}$ miles in length when completed. About 13 miles were completed at the time of a committee's visit, and the works on the balance were well forward. The cuttings, side cuttings and embankments are almost continuous, and there are several bridges and numerous culverts.

LETTERS TO THE EDITOR.

THE COMMON HOUSE-FLY.

SIR,—In answer to "Normanton," I would quote the following:—"The familiar house-fly (*Musca domestica*) is apt to be considered an unmitigated pest. It is, therefore, time to call attention to some recent investigations of a chemist which go to bear out the pious axiom that everything has its use. This observer, noticing the movement of flies after alighting, rubbing their hind-feet together, their hind-feet and wings, and their fore-feet, was led to explore into the cause, and he found that the fly's wings and legs, during his gyrations in the air, became coated with extremely minute animalculæ, which he subsequently devours. These microscopic creatures are poisonous, and abound in impure air, so that flies perform a useful work in removing the seeds of disease. Leanness in a fly is *prima facie* evidence of pure air in the house, while corpulency indicates foulness and bad ventilation." By these observations it will be readily seen that the housekeeper, instead of killing off the flies with poisonous preparations, should make her premises as sweet and clean as possible, keeping all meat and food covered with wire covers. She may then leave the few busy flies she may have to act as airy scavengers.

"A PLANTER'S WIFE."

OXIDATION OF TEA: A QUERY.

SIR,—I wonder if any of your readers will take the trouble to answer the following query. I have found very great difficulty in obtaining a satisfactory colouring of my rolled leaf for the past month. Weather has been alternately weeks of mist and rain, and weeks fairly bright sunshine. My jât of tea is a low hybrid. Leaf three leaf and a bud, interval of plucking ten days. Pruning last year very light. Elevation high. Wither rather under, with lots of juice.

I at first thought it due to low temperature of fermenting room, only 55 to 60°, with the māl thinly spread and covered with wet cloth. I raised the temperature to 70° and 75°, and spread thinly as before. No improvement perceptible.

In the commencement of the year I had no trouble at all in getting a good bright colour. Is it, perhaps, due to the slow flushes, which are certainly far from free and not over-tender?

The flavour and pungency are satisfactory enough, and the colour of the liquor respectable. My great trouble is the colour of the roll, as the infusion comes out very dull.

I have to take the greatest care to prevent the pungency being lost, as frequently the tea will be almost flat, despite the green colour of infusion.

A solution of the puzzle will be very grateful to

BOTHERED.

GREEN MANURE.

DEAR EDITOR,—Re Mr. Nelson's letter on Coffee Cultivation without Manure in P. O. for 18th September, I should like to

ask a question. For how many coffee trees would a good E. L. shade tree produce loppings for the green manure application? At elevations from 3,500ft. to 5,000ft., between which limits a large number of the estates on the Nilgiris are situated it seems that on N.E. & E. facings coffee does not want shade at all, especially on steep land, since coffee, facing which has no shade, bears decidedly better than where shade is plentiful. On all other facings veering from S.E. to W., and on flats where there is a thin shading, the yield is better than at extremes are found, i.e., either a mass of shade or none at all. Having a lot of shade over coffee is absurd, as a number of planters are now finding out to their cost. A little common sense makes this quite plain. Coffee to bear must have sun, light, and plenty of it. Everybody knows, or at least, if they don't, they ought to know, that if you keep a plant in a close to a window without ever turning it, if it is well treated and watered, it will blossom, but only on the side next to the window while on all sides away from it few or no flowers can be expected. Why? Because sun and light cannot get at those sides. Turn the plant round every day, so that every side gets its fair share of light, and then it will flower all round. Well then, why does coffee blossom but a flower? How can you expect to get a full blossom if you don't let it have sun and light to draw it to? Many planters have packed dense shade over their coffee trees and now wonder why they get short crops! On the other hand, a little shade at good intervals has been found beneficial to coffee as it helps to ward off extremes of heat or cold. Hence it is clear that shade must be dealt out in moderation. Now return to the lopping question, on moderately-shaded land, if shade planted, say, about 60ft. along and 100ft. down a slope or 60 by 60ft. on a flat, one shade tree would have to furnish loppings for the manuring of from 160 to 100 coffee trees planted 6 by 6ft. Would not this be rather more than could be expected from a single shade tree? Presuming that it would, which is, I think, a fairly safe presumption, and also supposing for the present that green manure is superior to cattle or horse manure, which I must confess is a bigger mouthful to swallow, would it pay to plant up some land with nothing but leguminous crops overlooking the coffee land, if possible, so as to allow the coffee its full dose of loppings, without choking it with shade? Or, overlooking, as by means of wire shoots the green manure can be cheaply and easily conveyed to where it is needed.

I hope some one will be kind enough to answer my question on the subject.

NILGIRIS,
22nd September 1897. }

BADGE

"REGULATION OF SOIL-MOISTURE."

SIR,—I am glad to see the system of lightly stirring the soil with a view to conservation of soil-moisture, being so strongly advocated; and having tried it myself, I can vouch for its efficacy. The work should be completed as early as possible before the hot weather regularly sets in, and from the time of completion to the setting in of the spring showers any trampling over the ground by coolies should be avoided. But this should not interfere with recognised systems, for pruning is often carried on late into the hot weather, and pruning coolies would render the surface soil unfitted for keeping in the moisture. A compacted soil is as bad as a too deeply dug one. I suggest a very light pruning immediately after crop, as it not only takes less time, but is less of a shock to the trees and less strained by bearing. The stirring to a depth of four inches immediately follow this, and be the last work done. If manures must be applied before the monsoon, let them be put out after the showers have well set in, but those who have left the beaten track as to apply all manures after the monsoon have found the benefits derived therefrom to far exceed a manuring. Bulky manure can be stored in deep pits till re-

which they may ferment and mellow, but not decay and riorate, if properly protected from air and moisture by a eient covering. Immediately after the rains they can be dcast and dug in, and it will be found that the time they to become effective may be stated as somewhat proportional he depth at which they are placed. These bulky manures old be mainly depended upon to keep the soils up to the isite standard of fertility, while for assisting the trees in nring crop or resisting an attack of leaf disease, chemicals e in as supplementary aids. When these are applied, as their on is immediate, care should be exercised in selecting the e so as to get the utmost benefit from them; and of course ill depend much upon circumstances. But I am merely tioning the question of manuring here as affecting the hot- ther "stirring" of the soil. Where autumn manuring is estab- ed, it is removed from among the obstacles to proper "stir- ing." Trees that have been properly looked after do not give h trouble in the matter of pruning and handling, and I have and seen such good results from careful knife handling—i.e., ing and handling combined—in the monsoon, that I should ost feel inclined to suggest the omission of pruning after crop together, except perhaps when the crop has been heavy, when e might be need for it, just to remove those branches that had ne. If pruning could be put off later, then the soil stirring old be done immediately stripping was completed, and this uld complete the season's work. If two adjacent strips of land e tried—the one stirred, the other not—it would at once be n that all conditions being equal, the resulting crop from the ed land would exceed that from the unstirred, for there uld be less loss of blossom where evaporation from the surface he soil was thus cut off. My first experiment in this proved s conclusively some years ago, but with "Mamool" to contend h, it was some time before I got beyond the experimental stage, even when I generally adopted the system, it was not as com- ely carried out as it should have been, as other works erfered.

HUMUS.

COFFEE.

the Planter' on Coffee.

Our Calcutta contemporary writes that in its recent remarks on the coffee industry in India it had no intention to decry the dustry; yet it is bound to insist that "coffee planting as dustry does not occupy that favourable position in s year of grace which it did forty or fifty years ago." r contemporary is of opinion that "what coffee planters ght to set about is to try and improve the soil which has d all the sustenance it once contained taken out of it by ars of continuous planting. It is better to go on opening e fresh land than to persist in planting and replanting at which has borne fruit a thousandfold more than there s any reasonable right to expect, and then to do it at a s from year to year."

all we return to the wild stock?

A correspondent, in enclosing a cutting re the coffee trade of Abyssinia, urges that the Government of dia might with great advantage import some of the seed r sale and distribution to South Indian planters. He vances, as reason, that Abyssinia is one of the, if not the, ue homes of coffee, and that we should thus be able to vert to the original wild stock. Our readers may perhaps member our addressing the Director of Kew on this very int, and that he strongly advised us *not* to take the rograde step of going back to the wild stock. By careful

selection of the seed from our healthiest and most prolific trees, we should be able to procure stock far superior to either the wild or present average cultivated crop. This is not a matter for Government, save indirectly. Planters must help themselves. As we have very frequently urged, particular trees should be selected on each estate and reserved solely for either seed or grafting. The latter process might be more expensive in the beginning, but is far surer and quicker. As coffee grafting is performed in the same manner as mango grafting, i.e., by inarching, there should be no difficulty in securing the services of a competent native gardener.

It would be as well to select the previous year some fine ripe seed off the hardiest and healthiest bushes available for the purpose of providing strong and hardy stock to graft on. Should interest be taken in the subject, we shall be glad to publish full directions for the proper carrying out of the operation.

Surface manuring with artificials.

In our "General Notes" of last week we had some remarks on draining, demonstrating how loss of soil by surface wash might be entirely prevented. If wash of soil can be prevented, it follows that loss of manurial constituents can also be prevented in a large measure. These results attained, the chief objections against surface manuring are overcome.

We imagine that the great objections to surface manuring are (1) Danger from wash, (2) Supposed inability of feeding roots to assimilate the manure, (3) Its alleged expense. The first of these we have met. The second is difficult to treat seriously, save on the supposition that the feeding roots of coffee are confined to a radius of a few inches round the stem. The last objection, that of expense, we have still to dispose of. It may be held that the extra expense of draining incurred by the method advocated last week should be reckoned in. This we hold to be unreasonable, as its value as a preventative of wash is more than enough to justify the slight extra outlay of five to six rupees per acre. The cost of applying artificials broadcast and digging in lightly is certainly far less than pitting and covering in even the small eyebrow pits in common use. Weeding must certainly be more frequent, but as hand weeding can be perfectly done for 12 rupees per acre at most, *if regularly taken in hand every month*, we do not see any particular fault in this arrangement.

The benefits of the system are not few or slight. Practically the total cessation of wash, the complete and equal absorption of manure, no damage from cut or torn roots, and necessarily an estate free from weeds.

When it is remembered that the total cost will not be more than the usual expenditure on routine work, it must be admitted that we have made out a fair case, on paper at least.

The London Market.

Although the receipts in Rio and Santos have continued on the same heavy scale, says the *P. M. Review* of the 28th ult., and a fresh estimate of the present crop has been put forth by Messrs. Johnston and Co., anticipating from $4\frac{1}{2}$ to $4\frac{3}{4}$ million bags from Santos, prices have not given way. In the terminal market there was a slight fall in the middle of the week, but this has been fully recovered. A rise in the

Brazil exchange has also led to an advance in quotations in Brazil. In other kinds of Coffee, and at auction, there has also been a better demand, and qualities above the value of 75s. are all decidedly dearer, coloury parcels showing the greatest advance. Colombian and similar Central American sorts are from 1s. to 2s. dearer, while the principal home trade kinds, such as Mysore and Costa Rica, have all sold at a further advance.

OFFICIAL STATISTICS OF THE COFFEE TRADE OF THE UNITED KINGDOM.

	1 Month ended July 31.			7 Months ended July 31.		
	1895	1896	1897	1895	1896	1897
Imports	36,685	45,439	54,257	606,183	525,824	611,408
Home Consumption	20,156	18,836	19,830	152,265	146,686	149,293
Exports	37,363	35,130	45,855	278,385	299,713	258,302
Total Deliveries	57,519	53,966	65,685	430,650	446,399	407,595
Stock on July 31	263,742	219,065	358,347	...	...	...

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended Aug. 21, 1897.	Tons. 215	Tons. 237	Tons. 510	Tons. 354	Tons. 12,635	Tons. 10,315
For the 33 weeks ended Aug. 21, 1897.	9,242	9,472	14,177	14,531	...	...

The Brazil Coffee Market.

The latest accounts of the Rio coffee market are thus reported in the *Rio News*:—"The demand during the week has been steady, and the reported sales reach nearly 90,000 bags, with reserved business done, as to which only guesses can be made. The market felt the very free receipts, but generally dealers and factors were firm, and it is currently reported that no business was realised under 12·500dols. per arroba for No. 7, while this quotation is contested by some, who declare that at no time could coffee be had at under 12·700dols., and brokers' prices have generally been 12·800dols., at which there were buyers when the market closed on the 7th. The purchases by exporters in the interior have considerably exercised the factors, and also some of the banks, whose business is threatened by the 'new departure,' but, so far as we have been able to learn, these latter do not show any inclination to increase facilities, and the planters must have funds. The question has even been ventilated in the Chamber of Deputies, where, it is reported, one of the legislators virtually charged the exporters with forcing a decline in the Rio market to secure better terms from planters, who base their prices on the quotations furnished daily by the local press. And the planters are also charged with bad faith in selling their coffee to the exporters when they have received advances from the factors, whose security is virtually lost. We believe that exporters generally will finally abandon this mode of business, or, if they persist, a serious change in the coffee trade is imminent. In the meantime coffees are being poured into the ports of Rio and Santos, and are

being rapidly shipped; and the fact that the foreign market do not 'bear' prices furiously shows clearly that the Brazilian stocks and receipts are largely already in the hands of consuming markets."

TEA.

ESTATE BULKING AND BINS.

AN impression has of late obtained that London bulk tea was preferred by the trade. This is not so. More tea bulked in London is distinctly injured by the operation, as the bulking rooms, by the Fire Insurance Rules, cannot be artificially heated. The consequent exposure of the tea to the damp atmosphere is unavoidable, and fine parcels suffer in consequence and lose their flavour.

The great drawback to estate bulking is that, in many instances, the tea must remain in bins until enough has been sold for a break is made. It would be of immense service if a really efficient and air-tight bin could be placed on the market.

Until such an invention is registered, we would suggest the following alteration in the usual style of bin. At present a common shape is long and shallow. We would suggest that the bin should be, say, only three feet in diameter, and of any convenient height. Every five feet in height would hold about 1,000 lbs. Instead, or in addition to the ordinary folding lid, there would be a rather heavy block of seasoned wood fitting closely to the sides. This should be covered with a lining of cloth so as to fit more tightly still and practically prevent any intrusion of air to the tea beneath. Metal rings, to which cords could be attached, should be affixed to the upper side of the block to allow of its easy removal. The day's manufacture packed in the bin could be slid down the sliding lid or block could be let down and firmly pressed on to the tea. A loose cloth or two on the top, and an ordinary hinged lid would complete the operation. The idea in the above is to allow the smallest possible surface of tea to be exposed to the air. And as the day's manufacture would only run the risk of exposure for one day, we think that for practical purposes our bin would be found to answer well. To allow of easy unpacking when required, we should advise the doing away with the ordinary trap-door altogether. In its place we should have an opening of about two feet square, to be closed after each emptying of the bin by careful soldering on of a corresponding piece of tin, to prevent leakage of air upwards. We do not think, however, that this opening is necessary at all, as the lid could be removed sufficiently easily from the top. To economise work, and also to utilise old bins, it would be easy to have one large bin of the ordinary length, divided into compartments of the size indicated.

We shall be glad to hear of the results of experiments on this matter, as the subject is of much importance to owners of all but the largest concerns.

A correction.

In our last Market Supplement, we stated that the sale of Brooklands tea was put at 8½d. This, we are informed, is the figure which was paid for it. On the 26th ultimo the same lot netted 10d. a lb., a price on which the Manager is to be congratulated.

Red leaf.

A Sylhet correspondent of the *Planter* writes that no satisfactory conclusion has been arrived at on the subject, whether

should be thrown out or made into tea. He says that a man in Assam argued in favour of throwing it away; another made his into tea; yet another did the same, but priced it separately, and obtained 2 pies per lb. less for it than for his good leaf tea. Can any one say which of these three courses is the best?

Samples of Tea for France. The French Post Office, says the *H. & C. Mail*, announces that, to comply with Customs regulations, it has been found necessary to prohibit the importation of tea into France by sample Post in quantities weighing over twenty grammes. That weight is slightly less than three-quarters of an ounce, sample packets of tea, of which the gross weight exceeds three-quarters of an ounce, should no longer be posted. Samples of tea addressed to other places abroad, the weight of eight ounces named at page 377 of the Post Office Guide remains unchanged.

South America. We are also indebted to the same journal for the suggestion to create a market in South America. Very little tea is consumed in South America, and, so far as we are aware, no important step to increase the consumption has been taken. There is a chance to make an attempt now. An industrial exhibition, under the auspices of the Government, is to be opened in Lima, Peru, on December 9, which it is intended to make a permanent institution. Manufacturers of other countries are specially invited to send, for exhibition, machinery, &c., and classes that will be of use in Peru. All articles sent will be exempt from Customs dues as well as Consular fees.

Legumes in tea. "We note that experiments are being conducted on several tea-gardens with leguminous plants with a view to obtain a nitrefied soil, as these plants owe their property of fixing atmospheric nitrogen to the presence of nodules infested with bacteria to be found on the roots of nearly all Leguminosæ." Thus saith a Calcutta exchange. We wish the meaning were clearer, but are glad to observe the interest taken in the subject. On coffee plantations the use of leguminous plants simplifies matters greatly, but in tea the question assumes a far more delicate aspect. We understand Mr. Nelson has thought out a system of leguminous manuring with regard to tea, which we hope to have the pleasure of publishing in these columns.

Ceylon and Indian Teas in Russia. It appears from the last British Consular report from Odessa that the import of Ceylon and Indian teas into Russia is increasing. Last year about 100,000 lb. of tea were imported at Odessa from Ceylon. In the first six months of this year shipments amounting to 150,144 lb. arrived direct from Ceylon, in addition to a considerable quantity from London. As the amount imported during this period is one and a half times as much as that for the whole of 1896, it will be seen at what a rapid rate the import of this article is increasing. Indian tea has also been imported on an experiment to the extent of 45,000 lb. since January 1 last. These figures in themselves are, the Consul-General remarks, comparatively insignificant; but it is worthy of note that the importation of tea from China decreases in proportion to the increase of that of Ceylon teas. The latter are, however,

invariably retailed blended with China teas, as pure Ceylon tea is not appreciated by Russian consumers.

Dusty teas.

In one of its last issues, the London *Grocer* attempts some mild raillery on the advice we gave to planters re "broken teas," advice echoed and reiterated in every planting journal in India and Ceylon. It is true that Ceylon had the ill-luck to be the first to suffer in the drastic operations of the American sieve-test, but that is one of the risks that always attends brisk enterprise. Not the slightest reflection can be cast on the quality of her teas on that account, though the *Grocer* was of opinion that such was the meaning of our remarks, a pardonable mistake due to only partial knowledge of the trade, i.e., the handling of the manufactured article. Weight for weight, "broken tea" is often as superior in liquor to "whole leaf" tea as gunpowder is to "breakens." A time will surely come when consumers will recognize the great waste always attendant on the use of whole leaf tea, and, granted a satisfactory infuser, will insist on the finest gunpowder. Thus it will come about that tea tablets, made of compressed dust in the factory and stamped with the garden mark, will take the place of the present system of packing. As a matter of course, the whole system of manufacture will be changed, and with it, changes in our machinery will be inevitable. Prophecy is so convincing to the prophet, that it is actually with a jar that we must admit that the days are not yet. And to judge by the past, such days are many long years distant!

China beaten?

In a characteristic article our contemporary, the *Ceylon Observer*, lately drew attention to the fallacy of the popular conviction that China, as a tea-producing country, is on her last legs. Very far indeed is this from being the case. It is true that in Great Britain the imports have fallen to almost nil (29½ millions last year). But this has been more than made up elsewhere. In 1871 the total exports from China were 236 million pounds, last year they were nearly 239 million. The exports of whole leaf to Russia have increased over 10 times, while those of brisk tea have increased 7 times, the total exports to Russia being 27½ and 132½ millions respectively for 1871 and 1896. Not many signs of defeat here!

Japan and Formosa, (which province was of course till quite recently part of China,) too, increased their export during the same period from 18¾ to over 60 millions.

The American trade has also been developing hugely, its total consumption of Far East (excluding of course British grown teas) teas rising from 58½ to 92¼ millions. China, it is true, lost almost 9 millions, the gain being made by Japan and Formosa.

The total export of Far East Teas have risen from almost 255 to nearly 301 millions during the period under review. The British grown teas advanced simultaneously from 15½ to 215½ millions.

There are two ways of drawing a moral from the above. One is the happy one of thanking our stars that we have such ample worlds still to conquer. The other is the more gloomy one of counting the cost of the victories already gained, and reckoning up the probable cost of our future triumphs. For there can be no halting measures. Stagnation means disaster. And, within certain limits, the lower prices fall, the greater must be extensions of acreage to

reduce the cost per pound. For every year sees such great, but so costly, improvements in tea machinery and appliances, that the lot of the small planter is daily getting harder.

The Market.

Indian.—The supply continues to be moderate, according to the *P. M. Review* of the 27th ultimo, and, in consequence of the improvement in the demand, prices generally remain steady to firm. There has again been a good inquiry for the better kinds, especially for Assams and Darjeelings, and where no depreciation in quality is shown, quite previous rates have been obtained. Until supplies are more plentiful, there is not likely to be any material drop in the prices of the more desirable grades, as the demand is sufficiently large to absorb the quantity offering. As the shipments from Calcutta are increasing, and now exceed those of last season, while the outturn in many of the gardens continues to show an excess over that of last year, the imports will soon be more than sufficient to meet requirements, and it is not then improbable that values will decline. There is no improvement in the character of the Sylhet Teas, most of those offered being thin and undesirable in cup, and the same remark applies to Cachars. Doors growths, on the whole, are of a more useful description. Darjeelings, in many cases, show a distinct change for the better, and a few invoices were keenly competed for and fetched extreme rates. Some of the Assams, however, barely maintain the quality of the earlier imports, but they have met with a good inquiry and sold at about late rates. The Travancores brought forward were indifferent, and met with but a moderate demand at declining values. Of the 30,000 packages offered at the public sales, 28,268 were sold.

Ceylon.—Notwithstanding the large quantities again brought to auction, there was no diminution in the eagerness on the part of the trade to buy at prices fully equal to those of last week; in fact, in several instances, a distinct advance was established, several well-known marks realising $\frac{1}{4}$ d. to $\frac{1}{2}$ d. more than was paid for similar teas the previous week. The amount printed for next week shows a considerable falling off, and, as we pointed out last week, the quantity available for this market during the next few months is likely to be considerably smaller than was anticipated. Owing to the comparatively small quantity of low-priced Congou coming to this country during the present season, and the large demand that now exists for tea for price, to meet the requirements of the 1s. canister, there seems every prospect of a still further rise in common Ceylon Pekoes and Peko. Souchongs; in fact, any clean tea of fair quality below 6d. per lb. can hardly fail to be good stock. Out of the 27,756 packages offered at public auction, only 1,128 remained unsold.

ROUND THE BUNGALOW.

NOTES BY "A PLANTER'S WIFE."

Bedroom comforts. I propose to give my readers a few hints which I think will not only add to the comfort of the bedroom, but also to its beauty. First there is the toilet-table, and if this is shabby, I would advise having it well washed, scrubbed and cleaned, and after it is thoroughly dry, have it rubbed well all over with sand-paper to make the surface quite smooth; after which give it three coats of white, cream, or ivory enamel, allowing each coat to get quite dry before putting on the next. Get two brass drop handles, one for each of the drawers, and you will be quite surprised at the smart appearance of the old table.

The toilet cover.

Now we come to the toilet cover, which I think, novel. My toilet cover is of pink silk, with a deep wide hem at the edge, which is lined with cotton wool till it forms a round roll edge to the table. The silk can then be covered with muslin or with an inexpensive lace of good design. The edge of the lace, of the muslin, should fall over the roll, to which it should be tacked with judiciously hidden stitches. The object of a roll edge to a toilet cover is to prevent the lace or frill edging from getting into the drawers beneath, or getting tangled up with the handles in an aggravating manner; and secondly, to prevent ornaments, such as rings, brooches, pins, etc., from falling on the table. It is obvious that to secure these advantages the roll should rest upon and not obtrude beyond the edge of the table.

The pincushion.

We come next to the all-important toilet pincushion. If you possess an old cruet-stand, which is no longer fashionable, I can tell you how to make a really distinguished-looking pincushion. Take out the bottles and wrench out the handles; clean it up and stuff it with a pincushion made of velvet or brocade filled with bran or fine hair, and the result will be most noble.

A handle for button-hook.

The handle can be utilised in various ways. It will make an elegant handle to a brush, or a steel button-hook can be affixed to the end. Another little convenience is a bracket at the head of the bed to hold a small candle-stick and luminous match box.

Pretty chairs.

One or two pretty chairs should be added to the ordinary deck chairs may be made very comfortable with little trouble. Aspinall the entire woodwork, or, if you prefer it, stain it with some varnish stain, light or dark, according to your taste. Get a strip of art serge, the width of the canvas, and a bold design down it in tapestry or double crewel wool. You may iron off a transfer, and then work the pattern merely in outline. On dark green, terra-cotta is effective, and so is orange. On pale blue, red looks well; and on brown some blues are pretty. When completed, sew it on the canvas securely. If you wish to make a chair very nice indeed, line the back with an unworked strip of the same serge or sateen of the same colour.

Small folding-chairs with tapestry carpet seats can be had very cheaply, and when the first freshness is off, they can be made into pretty articles of furniture. Or else, if you like the plan I am about to tell you of, you can buy new ones and make them up before they are worn. Cover the carpet with a piece of Roman satin embroidered in silk crewels. White lilies on a pale blue or green ground would look lovely.

Bedroom slippers.

Procure three ounces of crimson Berlin wool, a small crochet hook, and a piece of cork soles. Make a chain of twelve stitches, and in these work eleven plain double crochet; second row double crochet, taking the horizontal loop at the back of every stitch, and increasing by working three stitches into the centre stitch of the preceding row. Third row the same, without increasing. Repeat these two rows until you have eleven raised ridges from the toe, which will cover the instep. For the side, crochet twelve stitches and work double crochets backwards and forwards until you have a length sufficient to reach back of the sole, then break off and work a similar piece for the other side. Join together at the heel. Work four rows of double crochet round the top—that is double crochet—twisting the thread once round a mesh one inch wide before inserting the hook to make the stitch; then one row of plain double crochet. Line the inside with flannel and sew to the sides, having first bound the edge of the soles with ribbon. Finish off with a ribbon rosette in front.

THEY DON'T WATCH THE POT.

A WATCHED pot never boils, and a watched clock never runs. Nothing is quick enough for impatience. Minutes, hours, and days are mere words after all. We are happy—a day is but an hour. We are miserable—an hour is a day.

From the summer of 1890 to the autumn of 1892 wasn't a contented and busy people; but to Mrs. Annie Dutton it was like one of those tremendous geologic periods that the learned men talk about. For it was measured by weary heart-beats and steps taken in pain. Her trouble began as it begins with

ed multitude of women—the tired and languid feeling, the
st with food, the distress after eating, the coated tongue, the
ng pain at the pit of the stomach, the nausea and vomiting of
uids, &c.—a dreary list.

ting of her experience recently, she says: "After a time I
o much distress that I never wanted anything to eat; the very
of it made me sick. Night after night came, bringing sleep to
t, but not to me. I was low, miserable, and worn out, and
sit for hours all alone, wishing for no company. And, then
vous. Why, the slightest noise startled me.

vo terrible years of this I was dragged through. In that time
four stone in weight, growing continually weaker. I consult-
ctor after doctor, but they were not able to do me any real
I tried change of air, yet was disappointed in my hope of
vantage from it. I only lost ground, and became more and
feeble.

en came unexpected help. In September, 1892, a neighbour
e told me of the good Mother Seigel's Curative Syrup had
er, and urged me to try it. I had heard this medicine well
n of for years; still I had no faith that it would benefit me in
ondition. However, my husband got me the Syrup from
, and after I had taken it a few days I felt better. I could
nce more, and my food agreed with me. After I had used
bottles I was a new woman. *I was well*; and I have been in
health ever since. Now I recommend the Syrup to all our
ners and friends, and so does my husband.—Yours truly,
(ed) Annie Dutton, Nottingham Road, Borrowash, near Derby,
r 6th, 1893."

to the opening symptoms, the narrative of Mrs. Susannah
e is identical with that of Mrs. Dutton, so we need not repeat

October, 1890," says Mrs. Durose, "I read about Mother
's Syrup in a little book. I got a bottle, and after taking it a
time I was well as ever, although *I am 78 years old*. My
ter, who suffered from weakness and neuralgia, took the
y with great benefit. I know many others who have been
by it after all other means had failed.—Yours truly, (Signed)
nah Durose, Hawthorn Cottage, Borrowash, near Derby
r 6th, 1893."

latter lady would be called very old, as she is 78; and, as
average nowadays, she *is* old. Few of us, perhaps none,
ny hope of living as long as she has. Why not? "The days
years are three score years and ten," says David. But most
race fail to reach 70, while many exceed it. There is no law,
ct, on the subject. We are each entitled to live as long as we
nd to be as happy as we can; and both depend (accidents
ed) on health; and health means the continued natural action
digestive process.

d that Mother Seigel's Curative Syrup promotes *that*, a host of
sses in England alone have testified.

**PHYSICIANS DISAGREE AND PHYSICIANS COINCIDE NOT,
THEN WHY NOT TRY
STEEL'S AMERICAN BALM.**

**HUNDREDS HAVE TESTIFIED TO IT
THOUSANDS HAVE COMMENDED IT**

AS BEING

and certain remedy for Rheumatism, Neuralgia, Lumbago, Sciatica,
Muscular Stiffness and other Articular and Nervous Complaints.

Sold in pots, 12 Annas.

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2 do do ...	" 35	" 30	" 20	" 12 do
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w. approved customers.

MARKET SUPPLEMENT.

SATURDAY, SEPTEMBER 25, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (September 3, 1897) says:—Moderate supplies were offered in Auction this week consisting chiefly of many descriptions of Central American, the bulk of which sold at steady rates.

About 1,000 bags East India were offered, good Coorg and Neilgherry selling at full to extreme prices, while grey kinds realised valuations.

Central American went off readily at a slight advance for desirable and colory lots, but common kinds were not so easily disposed of, and sold somewhat irregularly. *Futures* continued heavy receipts and increased estimates for the present Santos crop exercised a depressing influence and prices shew a decline of about 2/- on the week.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending August 31st, 1897, says:—Bank rate 2%. Bombay Exchange closes at 1s 3 $\frac{1}{8}$ d. Brazil Exchange 8 $\frac{1}{8}$ d. Rupee paper 3 $\frac{1}{8}$ % 63 $\frac{3}{4}$. Silver 23 $\frac{1}{2}$ d per oz.

Coffee continues steady on the spot, and all good qualities have again been well competed for at fully last week's values. Brazil markets are quiet.

The sales included:—34 casks and tierces 12 barrels and bags Plantation Ceylon sold from 68s to 115s. Of 3 cases 400 bags East India, 3 cases 379 bags Neilgherry sold from 62s 6d to 102s 6d, and 21 bags Travancore were bought in; 441 barrels 5 bags Jamaica chiefly sold at 53s to 121s; 183 bags Costa Rica 63s to 68s; 2,836 bags Guatemala chiefly sold at 45s to 102s; 395 bags Nicaragua 46s 6d to 56s 6d; 226 bags Salvador chiefly sold at 58s 6d to 86s; 459 bags Vera Paz and Coban small part sold at 60s to 101s; 3,899 bags Columbian chiefly sold 50s to 103s 6d; 100 bags Guayaquil bought in; 196 bags Peruvian part sold at 47s 6d to 50s; 115 bags Venezuelan bought in; 52 bags Nyasaland sold at 69s 6d to 48s. On quay terms. 278 bags Rio were bought in; 427 bags Santos part sold without reserve at 32s to 35s, and 499 bags washed Santos chiefly sold at 54s to 64s.

Futures have been further depressed by the continued abnormal receipts in Brazil, which have averaged during the past week 20,143 bags in Rio, and 36,000 bags in Santos. The market closes quiet at a decline of 6d to 1s, viz.:—Good average Santos in Havre, December delivery, fcs. 42.75, in Hamburg pf. 34 $\frac{1}{2}$, and No. 7 low ordinary Rio in New York \$6.35.

To-day's London official quotations are:—

	Sept.	Dec.	March	May	July.
Rio	33/6	34/-	—	—	—
SANTOS	34/3	34/6	35/3	35/6	36/-

We quote:—

Ceylon, mid. to good mid. 102/@106/	Costa Rica, mid. to fine... 84/ @110/
Do. small to low mid. 80/ „ 101/	Do. ord. to low middling. 62/ „ 83/
East India, mid. to good	Jamaica, good to fine ord. 52/ „ 66/
mid... 89/ „ 103/	Do. greenish to fine
Do. small to low mid. 74/ „ 88/	colory... 74/ „ 125/
Guatemala, mid. to fine... 80/ „ 106/	African ... 30/ „ 32/
Do. good ord. to low	Columbian, ordinary ... 48/ „ 53/
mid... 61/ „ 79/	Do. good ord. to
Salvador, good ord. foxy	low mid... 54/ „ 80/
greenish... 57/ „ 58/	Do. mid. to fine... 81/ „ 102/

Receipts in Brazil compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
Rio	990,000	692,000	538,000
SANTOS	1,652,000	1,148,000	755,000
	2,642,000	1,840,000	1,293,000

Prices realized at auction for the principal Marks of East India:—

NEILGHERRY.				
	A	B	C	PB
Munjoor } 90/6	82/-	72/-	80/-	
Nilgiris } bid				
A } 89/-	79/-	62/6	86/-	
Crofton } 102/6	93/-	76/6	100/-	
Nilgiris } 94/-	84/-	69/-	88/6	
Neilgherry ...				
Munjacumbay...				
Landed last week ... 348 tons.	Deliveries ... 661 tons.	Stock ... 12,322		
Do. last year ... 491 „	„ ... 523 „	„ ... 10,283		

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Re dated September 3rd, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898... 203,217 packages.	371,565 packages.	13,014 pack	
1896-1897... 214,577 „	331,715 „	14,665 „	
34,085 pkgs. INDIAN	Total 61,682 packages were offered in p		
26,903 „ CEYLON			
694 „ JAVA			

Indian. Although supplies have not been excessive, a rather qu tone has come over the market, and prices in many cases have s some re-action from the recent advance. Teas from 8d. to 1/-, if less desirable liquors are most affected.

Week's av. of Tea sold on Garden Account, 1897, 23,029 pk av. 10d. 1896, 24,713 pkgs., av. 10 $\frac{1}{2}$ d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam ... 12,419 p	11 $\frac{1}{2}$ 13,233 p	11 $\frac{1}{2}$ 55,028 p	11 $\frac{1}{2}$ 64,958 p	
Cachar and Sylhet.. 3,492 p	6 $\frac{1}{2}$ 5,102 p	7 $\frac{1}{2}$ 27,316 p	6 $\frac{1}{2}$ 38,343 p	
Chittagong ... 255 p	6 $\frac{1}{2}$ 87 p	6 $\frac{1}{2}$ 586 p	5 $\frac{1}{2}$ 259	
Chota Nagpore ... 84 p	5 —	84 p 5	292	
Darjeeling ... 2,270 p	1/1 $\frac{1}{2}$ 2,230 p	1/1 $\frac{1}{2}$ 16,359 p	11 13,733 p	
Dooars ... 2,763 p	7 $\frac{1}{2}$ 2,412 p	7 16,389 p	7 $\frac{1}{2}$ 17,386 p	
Kangra, &c. ... 186 p	9 178 p	8 $\frac{1}{2}$ 1,951 p	7 1,379 p	
Neilgherry ... 357 p	7 243 p	8 $\frac{1}{2}$ 1,638 p	7 746 p	
Teraï ... 922 p	7 $\frac{1}{2}$ 124 p	7 $\frac{1}{2}$ 2,145 7 $\frac{1}{2}$	1,081 p	
Travancore ... 287 p	6 $\frac{1}{2}$ 1,104 p	6 $\frac{1}{2}$ 10,959 p	6 $\frac{1}{2}$ 7,073 p	

Total sold on Garden Account 1st June to date 1897, 132,855 pkgs., and 1896, 145,554 pkgs., av. 9 $\frac{1}{2}$ d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.
DUST. (Fair ordinary, dark liquor) ...	3 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d
FANNINGS. (Red to brown, strong rough liquor) ...	4 $\frac{1}{2}$ d	5d	4 $\frac{1}{2}$ d
BROKEN TEA. (Brownish to blackish, strong liquor) ...	6 $\frac{1}{2}$ d	7 $\frac{1}{2}$ d	6d
PEK. SOUG. (Blackish greyish, useful liquor) ...	7d	7 $\frac{1}{2}$ d	7d

SUPPLEMENT TO "PLANTING OPINION."

		1897.	1896.	1895.	1894.
E.	(Greyish to blackish, some tip, useful liquor)	... 8½d	9½d.	8d	9½d
SOUG.	(Blackish greyish, inferior liquor).	5½d	5½d	5½d	5½d
E.	(Blackish greyish, some tip, inferior liquor)	... 6d	6d	6½d	6½d

lon. In anticipation of the usual falling off in supplies during the months, buyers are operating with more confidence and are slightly advanced prices for all excepting the poorer liquoring which so far show little or no movement. The general quality is to improve. Average for week rather over 7½d. against 8d. for time last year.

ylon Tea sold on Garden Account 1st January to date 1897, 76 pkgs., av. 7½d. 1896, 702,094 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	... 6½d	6½d	7d	6½d
PEKOE (Ordinary leaf, little twist; fair liquor)	... 7½d	7½d	8d	8d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	... 5d	5½d	6d	5½d
PEKOE (Somewhat bold leaf; indifferent liquor)	... 5½d	6d	6½d	6½d

Java. The Java Teas included a fair proportion of useful liquoring parcels, the most noticeable of which were from the "Panoembangan" and "Perbawatte Estates," the 108 pkgs. of this latter mark realising an average of 11½d. per lb.

MOVEMENTS of TEA in LONDON (in lbs.) during AUGUST.

				IMPORTS.			DELIVERIES.		
				1897.	1896.	1895.	1897.	1896.	1895.
N	...	...	...	12,479,925	12,649,203	17,059,557	8,311,815	8,155,395	8,682,885
ON	...	...	...	8,854,174	6,899,668	8,375,476	8,350,064	8,015,420	7,645,882
	...	...	...	276,640	256,690	452,900	360,850	482,160	319,970
A, ETC.	...	...	...	5,558,552	8,336,073	7,903,199	3,046,373	3,406,868	3,935,971
TOTAL lbs. ...				27,169,291	28,141,634	33,791,132	20,069,102	20,059,843	20,584,708

FROM 1st JUNE TO 31st AUGUST.

				IMPORTS.			DELIVERIES.			STOCK.	
				1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.
AN	...	...	...	20,387,694	21,037,341	24,132,036	26,820,855	24,979,854	24,528,906	25,802,051	22,808,097
ON	...	...	...	29,944,274	27,402,906	25,146,236	25,181,196	23,560,232	22,948,958	24,716,258	22,400,208
	...	...	...	1,019,340	1,263,710	1,104,180	1,073,030	1,341,060	1,062,950	698,530	910,350
TA, ETC.	...	...	...	12,695,439	15,031,161	16,863,607	8,299,228	9,396,907	10,806,488	17,399,550	25,273,870
TOTAL lbs. ...				64,046,747	64,735,118	67,246,059	61,374,309	59,278,053	59,347,302	68,616,389	71,392,525

Bank rate 2 per cent. Exchange on London three months sight.—Calcutta 1/4½; Colombo 1/4½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 10d.) September 3rd.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
lgherry	357 p	7	...	...	...	...	...	...	50½c	6½	40½c	6½	14½c	5
zon	104½c	6	...	...	...	...	...	...	...	...	...	...	...	...
or Hall	172 p	8	88½c	8½	84 p	7 7½	...	...	7	† 5½	2	5½	20½c	5½
O	81 p	6	...	...	52 p	6 6½	...	...	...	...	...	...	...	...
vancore	287 p	6½	...	...	55	5½ 5½	45	6½	29	4 4½	...	...	6	2½
erslie	135	5½	...	...	3	5½	...	...	...	...	...	...	...	...
tfell	3	5½	...	...	3	5½	...	...	7	5½	...	...	8	5½
shurst	143	7½	93	7½ 9½	35	6½	...	...	...	...	...	...	...	...

Teas marked thus † are New Season.

Addison & Co.'s Printing Works

are provided with the latest patterns of Steam Machinery for the production of all descriptions of High Class & General Printing.

PRINTING.—Commercial, Official, Legal, Private, Educational, Social, Fancy Artistic and Illuminated. Every description of bookwork or jobwork, from a visiting card to a three-vol. novel. Colour printing a speciality.

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ADDISON & Co., the Pioneers of the Cycle trade in South India, are Sole Agents for the celebrated Singer, Swift and Premier Machines. Raleighs, Waverleys, Colombias, Bantams and other High-Grade Machines also stocked. The "Addison Special," built by Humber & Co., Limited, cushion tyres, the cheapest machine ever offered in India, Rs. 190. Send for Cycle Catalogue.

**Works: 153; Fancy Goods and General Stores: 188; Cycle Stores: 189,
MOUNT ROAD, MADRAS.**

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

. II.]

COONOR, SATURDAY, OCTOBER 2, 1897.

[No. 27.]

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ADVERTISEMENTS.—From the 1st October, 1897, the charge for advertisements will be: 4 as. per line for the first, 3 as. for the second, 2 as. for the third and succeeding insertions. Five-line advertisements for subscribers will be inserted for three issues for one rupee; non-subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

P.M.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 8th October 1897.

Nellampathy. 29th September.—Rain for week 73 cents; cloudy and light showers. *Leaf-disease*—Having come earlier than usual seems to be leaving earlier, as some places are almost free of it. *Health*—Fair. *Labour*—Plentiful.

Nilgiris. SHOLUR, 28th September.—Only one day without rain since last report and a complete absence of sunshine, making tea manufacture, from the small quantity of leaf obtainable under the circumstances, a laborious and unsatisfactory operation. Rainfall for month 5'61, making 48'33 to date. Temperature much lower during the day, highest and lowest being 69° and 59°. *Labour*—Plentiful. *Health*—Good. *Grains* same as last week. *General*.—A little black bug owing to continual wet.

GENERAL NOTES AND ARTICLES.

Drains again. A correspondent gives elsewhere an interesting extract from the "Diary of an Old Planter" on the subject of drains. The conclusion runs as follows: "The result of my experience of catch-draining is that with a drain at a gradient sufficiently easy for the water to deposit the soil held in solution, the drains block and burst, causing immense damage.

If cut at such a gradient as to keep themselves clear, the soil is cleared off infinitely faster than with no drains at all." The alternative systems, we may remark, are monsoon weed-growing and water-pits. The author, now alas! dead, of the Diary alluded to was one of the most capable of the generation of planters now so rapidly passing away. His opinion consequently is of great weight. Yet between the drainage systems tried by him and that advocated by us lies a wide difference, *i.e.*, in the distance between each drain. We suppose that 60 feet apart is probably the maximum distance drains could be cut with any advantage on the *gentlest* of slopes. On really steep land such drains are ridiculously inadequate; in fact, we believe that 20 feet apart in many instances would not be a bit too close. Now it is very patent that the rush of water down sixty feet of hill must be far greater, even in proportion, to that off 20 feet only. Consequently that three drains cut at the lesser interval would carry off with perfect safety a much larger rainfall than could be dealt with by one alone.

Further, that, as the fall or rush of water gains power in direct ratio to its velocity, the soil carried away by swiftly flowing rivulets sixty feet long must be directly and proportionately greater than slower running streams a third of that distance. The further apart the drains are placed, the more concentrated must be the flow of water therein. It's a case of *divide et impera* again. The whole object of careful draining is to arrest the hundreds of small rivulets before they have time to combine their forces. We still hold, therefore, that by systematic and careful draining wash can be practically stopped altogether. Whether water-holes or monsoon weed-growing and sickling are better methods or not are outside our argument. With these we may deal later on.

Rhea in the N.-W. Provinces.

Mr. W. Gollan, Superintendent of the Government Botanical Garden of Saharanpore, writes to the Secretary of the Agri-Horticultural Society of India:—"I suppose, like myself, you are often bothered over Rhea. Mr. Ribbentrop, Inspector-General of Forests, published a note upon it in the *Pioneer* a few weeks ago, and since its appearance I have had no end of letters about it. In his article, he mentions £7 (or Rs.120 at 1s. 2d.) per ton as a paying price for the dried *ribbons* landed at Bombay. I daresay the Rhea Fibre Syndicate would like to purchase them at that figure; considering it takes Rs.75-4-0 (£4-7-9½ at 1s. 2d. per rupee) to carry a ton of Rhea from Saharanpore to Bombay, I do not see where the grower's profit comes in. Rhea is one of those erratic plants that will grow or exist anywhere in India, but to make it produce even one good crop of *wands* in Upper India districts, it requires the richest of soils further enriched with expensive dressings of manure. Our highest outturn is a ton of *wands* per acre, weighed after stripping off the leaves, which yield from three to seven per cent. of *ribbons*, according as they are well cleaned and scraped, or not; so it takes from three and a half to seven acres of land to produce a ton of *ribbons*, which will, according to Mr. Ribbentrop, fetch £2-12-2½ (or say Rs.44-12-0 at 1s. 2d.) to the grower at Bombay, after meeting freight. After the grower has paid land rent, irrigation charges, cultivation, cost of stripping the *ribbons* from the *wands*, drying, packing, delivery at the Railway station, etc., I greatly fear his

£2-12-2½ will be *non est*; in fact, at Mr. Ribbentrop's price he will have to draw upon his banker pretty considerably after spending the above, to even produce his ton for which he is to receive £7 at Bombay."

It will be seen from the above letter that there is no profit to be made in the cultivation of rhea in the North-West, unless prices go up considerably, and it is probable that at the present rates, rhea cultivation in Assam will not pay. So far the Rhea Fibre Syndicate do not appear to have quoted *f.o.b.* rates for Calcutta.

It would be as well for members cultivating rhea to bear in mind that though plantations are made on rich soil, further enrichment is necessary to raise a remunerative crop.

Aloe Fibre.

The *Indian Textile Journal* informs us with a most interesting account of the trade of Bombay in Aloe fibre. It says: "Few of our readers are probably aware of the increasing business that is now being done in the export of Aloe fibre. There has been a continuous demand for the fibre from many parts of the world, and it seems that if India can supply it in large quantities there will be a good field before those who will set to work and begin the export on a large scale. As it is, it unfortunately remains a neglected industry in this country, but if once regular shipments were made and depended upon, a steady demand will be built up. According to a correspondent, a visit to the houses at Colaba would surprise many a capitalist in search of a profitable investment. Wagon loads of the fibre are sent down to Bombay from the growing districts by the merchants or their representatives. It is forwarded either in bulk or in loose bales, and on arrival is carefully sorted by the buyer, who fixes his price, which varies from Rs.100 to Rs.120 per ton according to the different qualities. The price delivered in London is reported to be from £15 to £17, so that a good margin of profit is generally left to the Bombay exporter."

India, like most of the Eastern countries, possesses a great variety of fibres; but very few of them are commercially useful. Aloe fibre grows wild in many parts of India, the Bombay supply depending on the wild tracts of Central India, the whole of the Deccan and the Bombay Presidency where, on the coast of Kathiwar, and particularly in the tracts near Poona, it grows in abundance. No systematic cultivation of the weed is yet attempted. Men, women and children of the lowest caste pick the leaves in swamps and malarious bogs when they have no better occupation to follow. The work is alike unhealthy and injurious, as the juice of the plant causes itching of the skin, and in the case of sores or cuts the limbs have been known to swell. Families set to work in groups, and while some gather together the leaves and stems, the others strike the leaves after they are dipped in water, against a stone, with a operation separates the fibre from the leaves, juice and waste. This is the most primitive of the methods still followed in many districts, but of late several hand machines of somewhat crude design have been made by which the fibre is extracted. Having separated the fibre in this way, the natives attend the bazaar with their supply and part their small bundles for a very nominal consideration, the shape of food-grain or copper coins. The fibre is not used in this country either pure or mixed with hemp or flax.

ng cordage, etc. America exports large quantities of fibre to all parts of Europe, Mauritius being next in her y. The plant in these countries is, moreover, systematic-cultivated, and the fibre being extracted by improved machinery, is commercially far superior to the Indian alooe.

EXCHANGE—THE RISING RUPEE.

R many years loud and seemingly universal have been lamentations over the *falling rupee*; now a still small is beginning to make itself heard whose burden is *rising rupee*, and it is a voice that will probably increase ere long it makes itself heard over the length and breadth of the land, at least the land of India.

was glad to see that Mr. Acworth took up the subject at the recent meeting of the U. P. A., and that you direct attention to it as a matter deserving of discussion amongst members.

Whatever complaints may have been made against the falling rupee, it was not one in which the growers of produce for export, and amongst them the tea and coffee growers had any reason to join. An exchange always favorable to the planter throughout many fluctuations has been the antidote for leaf disease and short crops from whatever cause. Many a brave planter has gone down in the struggle with leaf disease, and but for exchange many would have succumbed; and even those who may be reckoned prosperous might still have been making uphill work of it. It is natural, then, when they perceive that they are being gradually deprived of this advantage, that the planters should take the matter in hand. One at the meeting of the U. P. A. seemed prepared to follow Mr. Acworth in discussing the subject, and probably like Mr. Hodgson they all felt it to be an intricate

It is particularly a subject which requires study, and could be well if the planters made themselves acquainted with it, for unless it is seen that they speak from an intelligent knowledge of the matter, their resolutions and proposals will carry little weight with those to whom they are presented.

is a case that forcibly reminds one of the two sides to a shield. The Government and the services largely interested in making remittances to England see the side which represents the least loss in remitting. Planters and growers of produce for European markets generally see that marked with low rates of exchange which gives them the greatest number of rupees for each pound sterling of their produce sold. The merchant and banker occupy an intermediate position. They may be said to see the old edge on and observe nothing but a constant wobble in which no side is distinctly visible, the fluctuations being their bane.

Whatever the proper remedy for this state of things—I hold it is no temporary action such as closing or opening the mints that will do—the planters have every reason to complain of the way they are being handicapped by growers who have the full benefit of the present price of silver. It affects a very large body of producers. Wheat, jute, indigo, seeds, cotton and a host of other things suffer in the same way. But the question is, what is to be done? As everyone who had studied currency matters foresaw, the closing of the mints, by stopping the

usual fresh supply of rupees and by reducing the demand for silver, must in time impart an artificial value to the rupees in existence, a value out of keeping with the world's market value of silver and the silver currency of other countries. But then the object of Government was to raise the exchange value of the rupee and bring it more into line with sterling money, which, of course, is based on a gold standard; and this is being gradually done. If I remember the Government programme rightly, the next step is, when the rupee has reached certain level, to make it exchangeable for gold and thereby bring about a mixed currency. Whether they will persist in carrying out this programme remains to be seen. It was adopted after thoughtful deliberation. Mr. Acworth, therefore, was wise in pointing out that isolated action would be unavailing, and that they should get the Chambers of Commerce and other influential bodies to join in representing the matter to the Government or House of Commons. But as I have said, what is to be done? What will the planters propose? Are the mints to be opened, exchange allowed to fall, and the Government and the services to be again embarrassed with costly remittances. The covenanted services can, I should say, be easily dealt with, for the Government can arrange to meet them by a fixed rate of exchange, and this would be only fair to men originally employed in England.

The present position of exchange favours the home manufacturer who exports to India, and Manchester would no doubt have a say in any proposed change. Manchester influence will no doubt meet with response from many members of our Chambers of Commerce who have large dealings with that city. Mr. Acworth spoke of India having practically no manufactures. Well she has developed the manufacture of cotton yarn and certain grades of cotton cloth on a considerable scale, and if the rupee were allowed to fall to its natural level, the strong tendency would be to promote the making of fabrics and other goods in this country instead of remitting for them to England. This again would be opposed to home interests. The whole goes to show the conflict of interests, and that the planters when they essay to tackle exchange have no simple matter to deal with.

Things, however, have become so abnormal that I believe there can be no rest till something is done to place them on a better footing. I see by a late *Madras Mail* that the bullion value of the rupee, that is its metal value, is about 9½d.!! Well may we exclaim with Hamlet, "Angels and ministers of grace defend us," for is not this but the very ghost of a rupee, and think of the poor shilling, the Coin we valued so much in our younger days, worth less than 5d.!! What a temptation to illicit coinage? Who will say the game is not worth the candle? I was much struck the other day in being paid Rs.40 in bright shining coins, one would have said just fresh from the mint. What was my surprise to find they bore the date 1840!!! Now was this from an old hoard carefully wrapped up and preserved from any taint of tarnish for 57 long years? or had they come direct from some private mint, the old die having been got hold of? It was a specimen of coinage which set me a-thinking.

My idea is that the only real cure for all these evils of the currency is a return to bimetalism, but to go into this would extend these remarks beyond due limits. A knowledge of

bimetallism, however, is necessary to a right understanding of currency generally, and I may take it up later on. Meantime I would illustrate shortly the abandonment of the system by employing a parable.

"There was a stout ship once named the 'Sound Currency.' During 70 years she had ridden out many a gale with one anchor and *silver* cable at her port bow, another such anchor and *gold* cable at her starboard bow. At times there might appear a greater strain on the one cable than on the other, but together they held well, ensuring the safety of the ship, and she rode steadily through fair weather and through foul. In the year 1873 some long-headed sea lawyers thought she ought to do as well with *one stout gold cable*, so the silver one was cut away; gradually the good ship began to drift, and she drifted till the rocks on a lee shore brought her up, and there she has been going to pieces ever since. We amongst the wreckage are clinging for dear life to any spar or plank we can lay hold of to help ourselves afloat, and now we are getting well into the surf. If we manage through it on to some friendly shore where we can collect our thoughts and reflect quietly on the cause of all this disaster, we shall no doubt see the need for building a new ship having the two old cables that held so well through every vicissitude of weather."

As to the information you think would be useful regarding Planters' Exchange operations, I don't suppose the agent or firm making advances incurs any risk so far as exchange goes. For each advance made, the planter either draws a pukka bill under an arranged credit, or gives the agent or firm a *pro forma* bill which in regard to exchange has the effect of a pukka draft, so that the exchange belongs entirely to the planter. Of course with those planters who are entirely independent of firms and advances, they can make their own arrangements about drawing, timing their drafts to avail of a favourable rate, or to suit their requirements generally. There was a time when some firms lost considerably. Before it was perceived that exchange was on a decidedly downward grade, firms here made advances, drawing simply on their own credits and charging the planter interest till the Bills of Lading for his crop were obtainable when they drew bills on his account against the shipments at the exchange of the day. If between the time they drew on their own credits and the drawing against the shipments a heavy fall had occurred, the agent or firm was the loser. After it was seen that this had become a settled risk, that risk was placed at the door of the planter whose business was the occasion of it.

Your remark that "the higher the exchange the greater the sterling value of savings" applies equally to the planter as to the merchant. Suppose after benefitting by the low exchange that has prevailed the planter now sells his estate, he would decidedly gain by the higher level to which exchange has gone in taking the proceeds to Europe. But the savings form only a small part of his drawings for the working of the estate, so that taking it all round, a low exchange would be more to his advantage than a high one, always presuming of course that the rupee continues to retain its value here in commanding the same amount of labour, etc., as it did formerly.

As I hold that the motto, "United we stand, divided we fall," applies forcibly to the proper employment of the two metals in currency, I will sign myself

"UNITED WE STAND."

LETTERS TO THE EDITOR.

ANSWER TO CORRESPONDENTS.

["M."]—Scrupulous care is exercised in this office that the "copy" by correspondents is reproduced intact in this paper, unless a request is made for supervision. We regret this is not appreciated cases.—ED.]

THE WRIGHT FUND.

DEAR SIR,—In continuation of the Subscription, List of family of the late Adolphus Wright of S. E. Wynaad:—

Subscription from Mr. T. deRozario	Rs.	50	0
" Mr. J. Burrows	"	50	0
" Mr. Fred. Bell	"	50	0

Total ... Rs. 60 0 0

Promised from S. Wynaad through Mr.

J. W. Hockin	Rs.	55	0
--------------	-----	----	---

Total ... Rs. 115 0 0

Previously acknowledged ... Rs. 413 8 0

Total ... Rs. 528 8 0

Rupees 141-8-0 have been expended in the support of the fund through the kind offices of Mr. E. deRozario, of the Hosur Goodaloor, and Rs. 50 have been sent to the Rev. F. Goudin, Priest at Goodaloor, through whose kind help for the children will be provided for at the Adyar and Madras Orphanages.

OOTACAMUND,
15th Sept. 1897.

J. W. MINCEY

CONSERVATION OF MOISTURE.

DEAR SIR,—"Humus," in your issue of 25th September, advocates a "stirring of the soil" to a depth of four inches this before the hot weather regularly sets in, which also says should be the last work, as any trampling over the ground after the stirring will cause it to harden again and there will be no beneficial result.

Now what month does he begin the stirring operation, and what month is it completed? Suppose one to start about the early part of January, then what about the coffee on the ground would it not be covered over? I don't suppose crop picking perfectly completed anywhere by the end of December.

"Humus" also says a compacted soil is as bad as a too deep dug one. "Science and Coffee," by the late W. Pringle, on the other hand, advocates a good deep dig at about the same time.

"Humus" says to stir the soil. Who are we to be led by?

If "Humus" only goes in for stirring the soil before the hot weather, when does he indulge in a good deep dig?

Last year between the months of September and October I deeply forked the whole of my estate except one patch, and now I can safely say that I have got a far better percentage of crop in the dug patches than in the one which was not dug, the patches being more or less equally wooded. This confirms the case of compacted soil being a cause of failure.

I am inclined to believe in the soil being dug before the hot weather really sets in, but whether it should be a deep dig or only a "stirring" is what I am not thoroughly certain. This season I shall take two patches and fork one deep, the other lightly, and watch the result.

SANTAVERI,
28th September 1897.

A SIMPLE SUNDIAL.

DEAR SIR,—I observe that Mr. A. Hall favours your readers with the P. O. of 18th current with methods for finding true north.

to enable one to set the gnomon or stile of a sundial, object being of course to get correct time. I am afraid to the man in the street, or in this case to the man in the field, the "sine declination $\times$ secant latitude = amplitude," will be so much Greek, and Chambers' Mathematical Tables a sealed book. Many of us, I fear, have left our mathematics behind with our Eton jackets.

For the time, as Mr. Hall remarks, to the nearest Telegraph Office, if there be one close by, has certainly the merit of simplicity, unless there be a bridgeless stream in flood, or a man-eating tiger in the path. Most planters will avail themselves of this method and not trouble about a dial.

For me, our great enemy, swifter we are told than the weaver's shuttle, is measured by the sun though he seems to move but slowly. He is the hour handle and the great arch overhead dial-plate. If we imagine his having a rainbow for his base, then when he reaches the key-stone of the rainbow arch is noon. At that moment and in our latitudes he is either north or due south according to the time of year. For a few days as he passes our degree of latitude to the north or south he may be directly overhead.

What would probably be useful to the planter is an easy method of fixing the north and south line and thereby ascertaining when it is 12 noon, so that he can check or correct his watch.

For this purpose the following simple method is one I think my fellow will understand. It is similar to Mr. Hall's plan with the plumb line:

Level out a piece of ground, say, 8 or 9 feet square. Fix in the centre a straight staff about the thickness of a stout walking-stick—a piece of round bar iron would do well—and adjust it with plumb line to true vertical. When the sun has travelled high up into the heavens, when you suppose it is, say, 10 or 11 o'clock, measure exactly the length of the shadow cast by your staff and make a mark at its extreme end. After noon notice when the shadow (which of course will be on the other side of the staff) reaches exactly the same length as the morning one and mark the extreme end of it. Draw a line from one mark to the other. Bisect this line, that is divide it exactly in two, which can easily be done with a piece of string, measuring the length and doubling the string. From the middle point thus found draw a line to the staff. This line will be north and south. Every day when the shadow of the staff falls exactly on that line it is then 12 o'clock at that particular place. The shadow, it will be observed, too, is then at its greatest length. When the sun is north of the staff, the shadow will be thrown to the south and *vice versa*. When the sun is directly overhead the shadow will be directly under the base of the staff, or rather there will be no shadow at all just at 12 noon. Measuring the length of the shadow is, I think, more accurate than Mr. Hall's plan of taking certain hours before and after, for the watch may not keep time with the sun.

The above plan gives the planter the 12 o'clock a sundial could show. There are other elements to be taken into account in ascertaining 12 o'clock to a nicety, as astronomers, sailors and travellers have to do, but I think he will find the above sufficient. Of course he must remember he only gets local time. Madras is the Greenwich of India, and all time-pieces should conform to Madras time, as it rules the railway, telegraph and time arrangements in India generally. So you must find out how far you are west of Madras—we are all west here but—and as Mr. Hall says allow 4 minutes for each degree, Madras being east, 12 o'clock occurs sooner there than with us. So you must put your watch on according to the distance you are away from that place. At Coonoor Mr. Hall says the difference is about 16 minutes; so when the shadow of your staff

there falls in the north and south line, you must put your watch to 16 minutes past 12 to bring it to Madras time.

Gentlemen, I trust I have made it clear.

STEAM.

ARE DRAINS USELESS?

DEAR SIR,—In reply to your article on "Drains," in your impression dated the 18th September, I daresay that the following lines culled from the diary of an old planter may prove interesting to you and to your readers who seem puzzled as to the scant attention given by some planters to such everyday things as drains. In the following letter you will see that the system of draining as you advocate has been tried and proved wanting. The letter in question begins as follows:—"Your S. E. Wynaad correspondent, in the S. I. O. of the 5th instant, speaking of drains, says he has no practical experience of systematic draining in the Ceylon way. This is most probable, as little work of the kind has been done in this district for many years, owing to the complete failure of catch or surface draining when first introduced in the sixties.

"About 1867 catch draining was much spoken of by theoretical planters as work of the utmost importance, and was especially advocated by Mr. James Gordon, who at that time was considered a great authority on planting matters. I was then serving on an estate for which he was visiting agent, and received instructions from him to lay out drains all over the estate at 25 yards apart, leading them into ravines where such were available, and elsewhere into main drains running down the slopes. The drains were first cut at a gradient of 1 in 20, 1 foot wide and 1 foot deep; these were found to be utterly useless, as the gradient was found to be insufficient to run off the water, and after a heavy shower the drains blocked and burst, causing ten times more damage than was the case before the drains were cut. The drains were filled up, and after some experiments we found that a gradient of 1 in 15 just kept the drains clear, and that 18 in. by 18 in. was the best section of drain. The drains were all re-made the next season of the improved muster, and they worked splendidly! That is to say that the water came dribbling down the hill side, saturated with soil, into the herring bone drains, which conveyed it to the main drain, and thus hurled it into the ravines. The rivers and streams were like pea-soup, and we calculated that if the drains were maintained in working order, it would take about three years to land the whole surface soil of the estate in the Arabian Sea. We then filled up all the drains, adopted the system of growing weeds in the monsoon and keeping them sickled, and were never troubled with wash afterwards. In 1888 I opened a clearing for coffee, and finding there was great wash in one part where the slopes converged to a sort of a basin, I decided to give draining a further trial on a small scale. I cut drains 20 yards apart at a gradient of 1 in 18, 18 in. deep 2 feet wide, to avert wash until weeds would grow and bind the surface soil. The cross drains led into a main drain down the centre of the basin, which fall lower down into a ravine. The soil came down in tons with every shower. I bunded the ravine in two places with loose stones, so as to detain the soil or silt, and let the water run off. By this means a considerable amount of soil was saved, but men had to be sent up every day to clear out the bunds and carry back the soil brought down by the drains. It was loss upon loss! the thief gone with so much, and so much to find the thief. A couple of weeks convinced me of the impracticability of preventing wash by surface drainage. I shut up all the drains and cut water holes 3' $\times$ 1½' $\times$ 1½', one to each tree between the rows of coffee, and these stopped the wash completely.

One of the estates drained on the Ceylon system in 1867 was Seaforth in the Ouchterloney Valley. A most elaborate system of drains was cut at considerable expense by the late Captain

A. C. Griffin, who was always thorough in any work he undertook. One year's experience sufficed to show him the absurdity of the system, and the drains were all filled up the next season. The result of my experience of catch draining is that with drain at a gradient sufficiently easy for the water to deposit the soil held in solution, the drains block and burst, causing immense damage; if cut at such a gradient as to keep themselves clear, the soil is cleared off infinitely faster than with no drains at all.

"N."

"HUMUS AND COFFEE."

DEAR SIR,—“J. W. H.” in your issue of the 11th instant probably flatters himself that he has got me by the hip. Not much. In the first case he mentions in which he grew the finest coffee in the district “in land covered a foot deep with leaves and lumbered with all the logs and twigs of an unburnt forest,” you will note that the vegetable matter is applied as a *mulch*. It is well known how a mulch acts in keeping the water brought up from the subsoil by capillary attraction in reach of the roots so that they are able to derive the fullest advantage from the minerals held in solution in this water. And think you that no sourness arose in this case from the fact that the ammonia resulting from the decay of the vegetable matter, owing to the absence of precautions to prevent its loss, hadn't a shadow of chance of being converted into nitric acid because it was straightway dissipated into the air as fast as it could be formed? In this case I assume that under the circumstances digging was not feasible during the first year at least, before the expiration of which the greater part of the leaves and twigs rotted away.

In the next case, where “magnificent bushes” can be shown in poor land, “the result of an enormous amount of undergrowth being thrown into it every year,” I suppose digging was practised, so that a part at least of the ammonia was made available for the coffee. Or, perhaps, the plan of spreading the vegetable matter on the ground and covering it over with soil from renovation pits was followed here. But we are not particularly informed as to this. However, till we know to the contrary, we will suppose that that the loss of ammonia here was prevented in some way. (You see digging would not be impracticable in this case, as the land was not lumbered with all the logs, twigs, &c., of an unburnt forest.) This being so, it only proves that the land was rich in the necessary minerals and deficient only in nitrogen.

I can perfectly understand why too much humus cannot be applied in the way of spreading vegetable matter on the land and covering with the soil out of renovation pits, and I will tell you why; it is because the subsoil brought up out of the renovation pits probably contains a sufficiency of minerals and base to counteract any sourness that may arise and counterbalance any excess of nitrogen after undergoing the necessary weathering which it is exposed to on being spread on the surface. I could support my contention here by an authoritative quotation, but “J. W. H.” seems to hold the theories of experts in little esteem. I would point out, however, that these are able men who have embodied the experiences of past ages and the observations and study of half a lifetime in their books, which we would do well to avail ourselves of and endeavour to make subservient to our ends.

I do not think that anything “J. W. H.” has said disproves my “theory” that an excess of humus will cause sourness and foulness. What constitutes an excess of humus? It is when the base in the soil proves insufficient to neutralise the acids from the humus. Some soils would take more than others. “J. W. H.” has not yet reached the point beyond which any further applications of humus would prove hurtful, but let him go on. There are some plots in estates that get leaf-disease

regularly every year. I take this as one indication of the soil turning sour, and I have noticed great improvement result in such plots after draining them and treating them with lime.

Ah! that hackneyed phrase, “An ounce of practice, etc.” Have I denied anywhere in my article in *P. O.* of 28th August that estates opened without burning are the best cropping and longest lived? Or have I said anywhere that burning *improves* land, or that the fertility of young clearings *depend* on the mineral constituents set free by fire? All I said was that in clearings that have been cleared and burnt, a lot of mineral food has been set free by the fire. Can this be denied? And it must be acknowledged that results are more rapid in burnt clearings than in unburnt, owing probably to the greater abundance of plant food, but the reason they don't continue to do well is because the available food is soon exhausted. Can a ton-an-acre-crop be pointed to on unburned land under forest shade as it can be on burnt?

In the analyses I give from Dr. Voelcker, it is seen that a plot which had the least humus the coffee did best in. This is a hard nut to crack, so “J. W. H.” leaves it alone. The fact is, if benefit arises from applications of humus, it only proves that the land is well supplied with the necessary minerals.

H. G. R.

CONSUMPTION OF COFFEE IN INDIA.

DEAR SIR.—With reference to what you say in *P. O.* of 11th September in connection with my remarks as to the difficulty of arriving at even approximate results, I am afraid you have fallen into an error in your calculation. Using the Government acreage 283,432, a 3 cwt. crop would, as you correctly state, give

	cwts. 850,296
which you say would be an excess of ...	524,808
over exports for 1894-95, which accordingly would be	325,488

But taking your figures for the same acreage at cwt. $2\frac{1}{2}$,	
the total crop would be ...	708,580
This you say is an excess of ...	241,376

over exports, therefore the exports would be ...	467,204
--	---------

which shows an obvious disagreement in regard to the exports which should be one and the same in both calculations. Mr. Tatham's exports for the same year 1894-95, as given in *P. O.* of 28th August, are cwts. 291,621, which does not correspond with either of the foregoing. Using Mr. Tatham's figures the excess on a 3 cwt. yield of total crop over estimates would be cwts. 558,675; on a cwt. $2\frac{1}{2}$ yield 416,959, both very large quantities. Your last paragraph deals with calculations which include tea and cinchona as well as coffee, but taking the result, 37 per cent., as applying to coffee as well as the other two articles, this would be roughly one-third of the entire crop, the exports representing the other two-thirds; thus using Mr. Tatham's figures for exports ... cwts. 291,621

add one-half for the 37%	145,810
showing total crop ...	437,431

Your first seems the most sensible method of reckoning, but I think the yield all round would rarely if ever come up to cwts. 3 or even $2\frac{1}{2}$ per acre. Besides we should have *particulars* of the Government acreage. I am inclined to think the returns are not altogether reliable. Crop returns in one district that I worked with could not, so far as I remember, be made to fit in with any reasonable calculation as to yield per acre. The whole question of acreage and yield is one well deserving the attention of the U. P. A. In fact, it is not always that an owner or superintendent knows the correct acreage of the estate he works. I have known cases where a survey revealed great discrepancies.

In Mr. Tatham's returns for the past season, of
 the total cwts. 211,760
 native coffee amounted to 94,578
 leaving cwts. 117,182
 as plantation.

It is presumed that very little plantation would find its way into consumption in India. We know that it either goes through agents direct to Europe or is sold for European markets.

This, therefore, leaves cwts. 94,578 native coffee, or in round figures, say, 5,000 tons exported. If, therefore, your estimate of 20,000 to 30,000 tons for consumption in the country be approximately correct, the export portion would bear but a small part of the whole. But we know that there are recognised markets in the several districts and in the coast where native coffee is dealt in, and if such quantities go from these districts to the several parts of India, they would hardly do so without passing through these markets. I feel sure that any merchant or agent intimately acquainted with the trade would be more than astonished to learn that such immense quantities were dealt in or produced in the district without his becoming aware of it.

I am not at all inclined to accept Mr. R. H. Elliot's figures; 100,000 native gardens at 5 acres each would give 500,000 acres, even 2 acres each gives 200,000 acres, while in the last Government return I have beside me, 1891-92, the total Mysore acreage is only 130,440.

I must admit that the more I go into the matter the more puzzling does it seem, for I cannot believe that a quantity like 10,000 tons could pass out of the coffee districts without being observed. Toll-gate returns are annually given in the Coorg district, but as a rule they show a shorter crop than the coast exports do.

It would be interesting if returns could be had from the railways of coffee carried by them for distribution throughout the country if a separate account is kept.

It will be noticed in Mr. Tatham's exports for the past season that cwts. 29,583 went to Bombay and other Indian ports. Was this for transshipment to Europe, or for country use?

HARD NUT.

COFFEE.

Colour in Liberian.

A correspondent asks us to call the attention of our readers to the marked difference in the prices obtained by Indian and African shipments of this coffee. Two lots of the former were recently sold for 35s. per cwt., while in the same sale some African sold for 79s. 6d. The cause of this difference lay in their respective colour. The Indian coffee was *brownish*, while the African was *bright yellow*. This question of colour does not seem to have been properly attended to in India, but, as we pointed out some months ago, is a matter of the greatest practical importance.

Brazil.

The ever-increasing crops from Brazil and neighbouring countries may at times cause tremors to Indian planters despite the apparently total lack of effect in plantation coffee berries. Yet, on the other hand, the extremely low prices current have developed consumption to an enormous extent, widening the taste for coffee throughout the world. A large section of the public will gradually develop a taste for the superior qualities, which will tend to sensibly affect the market for our excellent East Indian growths. The only cloud on the market horizon is the danger of the general adoption of improved curing methods.

Coffee Tablets.

We have often wondered why some enterprising coast firm has not taken up in real earnest the question of creating a trade in "manufactured coffee" with England. There are undoubtedly large profits made in the preparation of the raw coffee for the table. Why should not these profits remain in the country? The difficulties are by no means insuperable. Perhaps the most suitable mode of procedure would be to roast and grind coffee, packing it immediately in airtight canisters or lead packets. The argument that the flavour would be lost is, we think, a false one, for are not coffee extracts and preparations of all sorts well nigh universal favourites? In the United States, a huge trade is conducted in the roasted bean, which is dipped in a patent preparation of glucose, etc. The article is known as "glazed coffee." This, however, would not save freight, while the powder would certainly greatly lessen the cost under this important item. It might be possible to imitate the methods of preparing brick tea, *i.e.*, by lightly sprinkling the powder with liquid arrowroot and forcing it into shape by means of hand-presses.

Coffee in New South Wales and Queensland.

Reuter announces that the New South Wales Government are encouraging coffee-planting. This looks as if the success attendant upon the industry in Queensland had set neighbours a-thinking. It may, however, be some consolation to the nervous (if there be any) among Indian coffee-planters to read the following remarks, sent by a planter to the *Statesman* of Calcutta:—

"I observe a commencement has been made in gathering the coffee crop on the Queensland Government State Plantation, at Kame-runga, in that colony, boys between the ages of 14 and 18 being employed, at the rate of half a crown per bushel; this is of course for 'cherry,' against our average of four annas for the same quantity, or, say, after pulping and garbling about 52lbs. of berry fit for the market. When interest on machinery, upkeep of cultivation, packing and freight are added, it will be seen that the Indian coffee grower will still be able to lay down his crop at about one-fourth the price of his Australian competitor. True, the once large areas under coffee have been greatly curtailed of recent years in this country, but those who still adhere to the cultivation have as little to fear from competition of Queensland coffee as from American home grown tea. Unless the price of labour rises in North Australia, coffee should pay, provided local markets can be found; but cultivation on any large scale for export is not likely to prove remunerative. In these days of keen trade rivalry, we could always undersell the Australians in their own markets, even though the various Colonial Governments might resort to protective measures in favour of their own growers either of tea or coffee. Protection for daily necessities, however, can only be carried out in new and thinly populated countries; for, as the artizan and labouring classes increase and outnumber the agricultural population, the majority will insist, as they did in the United Kingdom fifty years ago, upon all restrictions placed on food-supplies from outside sources being swept aside. However much producers may suffer from free trade at the outset, the nation at large benefits."

The London Market.

The continuance of such abnormal receipts at the Brazilian ports—the total during the first two months of the crop year being 2,642,000 bags—has again checked the upward turn that

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TERMS MODERATE.

prices had taken, and in the terminal market there has been almost a daily fall so that prices close from 1s 6d to 2s below a week ago. Although this has brought quotations down to the lowest recorded, there is still little desire shown to operate beyond immediate requirements, and it is thought that when the figures of the stocks on the 1st inst. are published, the supply will again show such an increase that any speculation will be checked. Notwithstanding this depression and fall in Brazil kinds, there has been a good demand for other descriptions, and the range of values has still further widened, all coloury kinds having been well competed for at auction, and prices being from 1s to 2s 6d dearer. A few lots of fine New Grenada have sold at prices quite equal to those of a year ago, while many marks of East India and Costa Rica are decidedly dearer than they were then. The Dutch Trading Company have advertised their next sale for Tuesday, when 19,000 bags will be offered, against 21,983 bags and 304 cases at the corresponding sale last year.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended Aug. 28, 1897.	Tons. 248	Tons. 218	Tons. 413	Tons. 305	Tons. 12,322	Tons. 10,283
For the 34 weeks ended Aug. 28, 1897.	9,490	9,690	14,590	14,836	—	—

Sambur and Shade.

Those interested in the vigorous correspondence carried on some months ago in these columns *anent* the damage done by sambur to shade trees on coffee plantations on the Nilgiris will note with attention the following order of Government, dated 27th July 1897:—

No. 390.—Under the provisions of Madras Act II. of 1879 (an Act to provide for the protection of game and acclimatized fish in the district of the Nilgiris in the Madras Presidency), and in supersession of the notification No. 498, published at page 825, Part I. of the *Fort St. George Gazette*, dated 28th October 1890, His Excellency the Governor in Council hereby fixes the undermentioned periods as the seasons during which it shall not be lawful to shoot at, kill, capture, pursue, or sell, or attempt to kill, capture or sell large and small game, respectively, in the year 1897 and future years, viz.:—

Large game (including all game other than hare and feathered game). } The 1st of June to 31st October inclusive.

Small game (hares and feathered game) ... } The 15th of March to 15th Sept. inclusive.

This notification shall apply to the following local area with the exception of the areas specified in the column of remarks so far as the shooting of sambur therein under free licenses obtained from the Collector is concerned:—

Local area.

The north bank of the Bhavani river from Attipadi in Attipadi valley to the junction of the Moyar river.

The west and south banks of the Moyar river from its junction with the Bhavani to the point in the Mudumallah district nearest to Gudalur.

A line carried thence to the head of the Pandi river (Ouchterlony valley).

Remarks.

(1) In the Halihaldroog and Pakasuraimalai reserved forests a margin of 300 yards round the limits of the coffee estate known as the Upperdroog.

(2) In the Pakasuraimalai reserved forest a limit of 600 yards to the east of the eastern boundary of the estate known as Ibex Lodge.

*The east bank of the Pandi river to where it falls near the Kar-kur pass in Malabar Payen-ghaut.

A line along the south crest of the Ouchterlony valley and across the western slopes of the Nilgiri and Mukurti peaks and Sispara ranges to Wallaghat.

A line thence along the west crest of the Silent valley (Malabar) range.

We congratulate Messrs. Mullaly and Grey on the partial success that has attended their efforts for the protection of their properties.

(8) In the Moyar, Kolmal and northern Hay reserved forests a margin of 300 yards round the limits of the coffee estate known as Leighwood and Northern Hay.

TEA.

Revised Indian Estimate.

The original estimate of the year's crop for 1897 was placed by the Indian Tea Association at 156,669,112 lbs., but owing to the generally unfavourable weather and short manufacture to date, a revised estimate of 148,011,705 lbs. has been issued—a decrease of over 8½ million lbs. The actual shipments to Great Britain up to date were 60,900,000 odd lbs. against 60,800,000 last year.

Brick Tea.

In the campaign for capturing the very important Russian market, we think that considerable attention should be paid to the fact that a very large proportion of the tea consumed is in the form of brick tea. There is no possible reason why hill teas for instance should not be just as readily consumed, if prepared in this form so familiar to the Russian, as the Chinese article itself. The processes of withering and fermentation are the same as usual. But when the roll has been partially fired, and admits of being rolled out in layers, it should be thinly sprinkled with liquid arrowroot to give it the necessary adhesion. It is then pressed into blocks and thoroughly fired. There are other mediums in current use in China, of fearful and wonderful nature, but arrowroot is the best. As our contemporary the *Planter* points out, conjee is apt to turn sour unless fortified, while sugar is likely to set up fermentation.

Open rolling.

In reply to a correspondent's advocacy of removing the top of rollers and increasing the depth of the box, the *Indian Planters' Gazette* writes:—

No advantage is gained by making such alterations, for although a larger quantity of leaf may be rolled, a proportionately longer time is taken in doing it.

Further, a certain amount of pressure is necessary to be applied *on to the mass of leaf*. The leaf inside the machine forms a ball as it were, and the *twist* is obtained by the leaves rubbing or pressing one against the other. By placing a large quantity of leaf in the roller, the leaf on the top certainly exercises a pressure on the leaf lying below, but this pressure is not *equally distributed* on all sides at the same time. The consequence is that some of the leaf gets a twist on to it, whilst another portion does not get rolled at all. To obtain a *perfect roll*, the pressure must be *evenly distributed*, right through, and on the whole mass of leaf, by some independent and external force.

Mr. Jackson's Rollers are so constructed that by keeping on "the top" the pressure exerted on the ball or mass of leaf within, causes each of the leaves of which it is composed to press *equally* one

against the other. The result is that *each single leaf gets the same twist, and each ghán comes out of the machine evenly rolled.* This even and perfect roll is not obtained when "the top" is discarded.

The great secret in rolling is to imitate the old "hand process" as much as possible. Let the *gháns* be of medium size; neither too small nor too large a quantity. Apply a gentle pressure. Find by experiment the most suitable pressure to turn out the leaf with a nice, even twist to it, and then stick to that pressure as a standard. Letting "the top" down on to the roll to its utmost extent plays the very mischief with the leaf. If a constant gentle pressure is applied the roll will keep cool. Handled in the manner suggested, Jackson's Rollers will turn out most perfectly and evenly rolled leaf, and (all other manipulations being equal) yield tea of as good a quality as can possibly be desired. The results obtained from the best of machines may be rendered unsatisfactory through ignorance of the proper method of working them.

Home Market.

INDIAN.—The market has been somewhat irregular, says the *P. M. Review* of 4th September, and in several cases prices are easier, particularly for some of the Assams, owing to a falling off in quality, which is very marked in many of the teas. Darjeeling growths have been in larger supply, most districts being represented, and, on the whole, the quality shows improvement, while from a few gardens some exceptionally fine teas have been received, which met with brisk competition at extreme prices. The active enquiry for these finest growths is due to the scarcity of really good Darjeelings, and it is probable that the demand will continue good until they become more plentiful. The medium and lower grades from the same districts sold irregularly, and prices were mainly in buyers' favour, some of the teas having now fallen to a point at which it would be safe for dealers to hold a fairly representative stock. With few exceptions the character of the later imports of Assam is inferior to the earlier arrivals, and, in consequence, they have sold at reduced rates, but those up to the standard of the earlier imports were well bid for, and brought quite former prices. It is probable that there will be a difficulty in following these teas later on. Most of the other growths, especially the commoner sorts, continue to show undesirable quality, and have sold at generally easier values, and until there is a decided improvement, and they show equal value to Ceylons, the trade in them is not likely to be so large as is usually looked for at this period. In comparison with August last year the following figures show the movements of Indian tea for the past month:—The imports are about on a par, 12,479,000 lbs. and 12,649,000 lbs., respectively, while the deliveries are in excess by 256,000 lbs. and the stock stands at 25,802,000 lbs., against 22,808,000 lbs. There were 32,436 packages brought forward at the public sales, and 28,306 were withdrawn.

CEYLON.—The demand continues good, and as the market has been well supplied, a fairly large business has been transacted. Good medium descriptions have met with an active enquiry, and the firm tone noticed of late still prevails, while prices for all grades have not only been well maintained, but are in some cases rather higher. Common teas, although firm, have shown no distinct change in value. The public sales comprised 26,840 packages, of which about 1,700 were withdrawn. The following are the figures for the past month compared with August last

year:—The imports amounted to 8,854,000 lbs., against 6,900,000 lbs., and the deliveries were 8,350,000 lbs. and 8,015,000 lbs., while the stock stands at 24,716,000 lbs. as compared with 22,400,000 lbs. It will be noticed that the deliveries exceed those of Indian teas, this being only the second time that such has been the case.

DISTRICT ASSOCIATIONS.

WYNAAD.

PROCEEDINGS of a General Meeting held at Meppadi Club on Wednesday, September 1st, 1897. PRESENT: Messrs. Abbott, Day, Mackinlay, J. R. Malcolm, Robinson, Trollope, Waddington, Winterbotham, and Hockin, *Honorary Secretary*.

Mr. Winterbotham in the chair.

The Proceedings of last meeting were taken as read.

The Hon. Secretary read the following report of the delegates to the U. P. A. S. I. Meeting at Bangalore.

Mr. Chairman, in accordance with the usual custom we have drawn up a brief statement of the chief conclusions arrived at at the last Meeting of the U.P.A.S.I. which have not been thoroughly reported in the papers.

The first subject dealt with was the Report of the S.I.P.E.C. and the action taken thereon is sufficiently explained by the letter from the U.P.A.S.I. to the Govt. of Madras which will be read to you but which cannot be reported in the Proceedings.

The next subject was the method of raising funds and you have no doubt seen the resolutions passed thereon. Their effect will be to keep the voting power entirely in the hands of delegates of Associations. The annual income according to estimates furnished by the Hon. Secretaries of Associations should be about Rs.5,000 this year with a tendency to increase to Rs.7,500, the maximum of assessment on the present acreage. The normal expenditure is about Rs.2,000 to Rs.3,000 per annum. The Reserve Fund, of which we lay a Rough Statement on the table, amounts to Rs.10,575-12-0, of which Rs.1,750 has been drawn out, leaving Rs.8,825-12-0 in hand. Of this, in the event of certain Governments and Associations interested, agreeing to contribute, it has been decided to vote Rs.4,000 for the purpose of combating coffee pests, and improving the strain and cultivation of coffee. There should be an annual excess of income over expenditure of Rs.2,000 to Rs.3,000, to replace these drains on the Reserve Fund, and this fund is still open to direct donations.

We put this Association down for a subscription of Rs.675 this year, being Rs.375 from the Association and Rs.300 from members. Our maximum subscription is Rs.693-2-0, and it is to be hoped other proprietors will subscribe to make up this amount, and also leave something over for direct payments to the Reserve Fund. This cannot long stand the heavy drains likely to be made on it if we go in for such expensive schemes as the employment of experts to help our industries.

As a concession to those Associations which wished to bring up more members to speak at the annual meetings each Association was allowed to bring up five delegates irrespective of its voting power which is fixed at one vote for every Rs.10 subscribed up to a maximum of 1 a. per acre.

It was decided that the U.P.A.S.I. should be registered under the Indian Company Act and the Hon. Secretaries of the District Associations agreed to allow their names to be entered as members. The Act requires there shall be at least seven members of a Company, and these members are liable for the expenses of winding up the company should it ever become necessary. It was felt that such liability would be quite nominal, as there would probably always be funds in hand for this purpose, or if not the District Associations would see their Hon. Secretaries did not suffer. The liability can, we believe, be limited to a certain sum.

The rules were amended to suit the new scheme of raising funds and we lay a copy of the amended rules before you. The only one that calls for remark is that which provides that $\frac{2}{3}$ of the minimum sub.

scription, which is $\frac{1}{2}$ of the maximum, must be paid within three months of the close of the meeting. In our case this $\frac{1}{2}$ of the minimum amounts to Rs.130. Unless arrears of subscriptions amounting now to Rs.162 are paid up shortly, we shall be unable to pay this before the 12th November. It should be paid earlier as the U. P. A. S. I. is short of funds until new subscriptions come in.

It would be better perhaps if we made our financial year agree with that of the U.P.A.S.I. and then we should have no difficulty about funds.

The last subject requiring notice is the decision arrived at on the employment of experts. We all felt that Mr. Newport's scheme deserved support. The Government of Madras will pay half the expense and the L. Pulneys will raise Rs.4,000 to Rs.5,000 for this purpose. Green bug does not at present affect us, but as it has spread from Ceylon to the Lower Pulneys, it may easily spread north as far as coffee extends. Personally we hope it requires a dry district to thrive in and our heavy monsoon will kill it, but that is no reason the U.P.A.S.I. should not afford help to districts that need it.

There was considerable disagreement as to the practical benefit likely to accrue from employing an expert for improving cultivation, and the subject was thoroughly thrashed out in special meetings of those most interested. Eventually it was agreed to meet the views of both sides by trying to secure the services of Mr. Cameron to improve the strain of coffee, and also to ascertain if sufficient support could be obtained from Associations and Governments interested to obtain with the help of the U. P. A. the services of an Agricultural Chemist.

In conclusion, we think we may congratulate ourselves on the result of this year's meeting. There were several subjects on which delegates held very strong and diverse views, but every one felt that it would be most unwise to try to force any scheme on an unwilling minority. Ample opportunity for the fullest discussion was provided in Committee and Sub-Committee meetings, and in the end, by the exercise of very considerable tact and patience on both sides, it was generally found possible to arrive at a resolution which met the views of all present. This is a most hopeful sign of the future prosperity and usefulness of the U. P. A. S. I.

(Signed) G. ROMILLY.

(") J. WILLIAMS HOCKIN.

A vote of thanks to the delegates for the able way in which they had represented the Association was passed.

New form of Contract.—There was considerable discussion on this subject, and the Hon. Secretary was requested to obtain further legal advice regarding the payment of wages clause.

Treasury Drafts.—Read Order No. 620 of 6th August 1897 of the Madras Government, Financial Department, stating that drafts on treasuries for private remittances cannot be granted unless local conditions render this course advisable.

Want of Cash in Vayitri Sub-Treasury to Cash Postal Money Orders.—Read several letters stating there was no cash available for the payment of Money Orders at Vayitri and Meppadi Post Offices from the 5th to 14th August.

The Honorary Secretary was requested to ascertain if the Postal Department is not responsible for the prompt payment of Money Orders granted by that Department and to address the Collector of Malabar regarding the inconvenience and hardship caused to coolies in a time of famine prices through the want of proper management at the Vayitri Sub-Treasury.

Medical Fund.—The Honorary Secretary of the Medical Fund reported that Dr. Barboza had accepted the appointment of Medical Officer of this Fund subject to three months notice to his present employers. His services will probably be available about the end of November. He also reported that the Meppadi Apothecary had arrived and that his services can be called for by subscribers. The new system of four Apothecaries and a Medical Officer is now completed.

Roads.—Read telegram stating that Rs.20,000 had been provided for the Calicut-Vayitri Road. Recorded with satisfaction.

Revenue Settlement.—Read letter from Mr. T. J. Boosey re the sale of a portion of his property on which he had paid the taxes for arrears of his jenni. The Hon. Secretary was instructed to address the Collector of Malabar asking that steps may be taken to prevent a recurrence of such irregularities.

Non-Service of Warrants in Coimbatore District.—The Hon. Secretary was desired to address the Superintendent of Police asking him to look into the alleged inefficiency of the Coimbatore Police in getting persons accused of breach of contract arrested.

Papers on Table.—Capt. W. F. Carslake's method of keeping his Check Roll.

Proceedings of Nelliampathy Planters' Association, June 19th, 1897.

" " North Mysore Native, " May 26th, 1897.

" " Nilgiri " " July 21st, 1897.

" " Shevaroy " " July 5th & 19th, 1897.

Pamphlet on Malaria by Surgeon-Major Ross.

Government of India Commercial Circulars on Mica, Sabai or Bahar Grass and Kamela.

Madras Dept. of Land Records and Agriculture Bulletin No. 3, Water Lifts.

Report on Government Gardens and Parks, Nilgiris, for the year 1896-97.

(Signed) H. B. WINTERBOTHAM,

Chairman.

(Signed) J. WILLIAMS HOCKIN,

Honorary Secretary.

THOMSON'S

ANTI-MALARIAL PILLS

THE PLANTERS' FRIEND.

The only known Antidote against Malarial Poison.

A sure and efficacious Remedy for Malarial Fever, Enlargement of the Spleen, Malarial Cachexia (Anæmia after Malarial Fever) and other Malarial symptoms.

Sold in bottles containing 100 pills, Rs.2-8.

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COLLINGWOOD & CO.,

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CYCLE EXHIBITION.

THE OAKLEY CYCLE CO.'S DEPOT,

St. Mark's Road, South Parade.

CYCLES ON SHOW AND FOR SALE.

MAKE.	Model.	Tyres.	Price net cash.	Gear.	Weight.
GENTLEMEN'S					
Ramblers (American).	No. 15	G. & J. pneumatic	Rs. 400	72	lbs. 26
Premier	S.	D. T. pneumatic.	315	66	34
Premier	R.	Do.	300	74	29
Royal Lagle	No. 4	Do.	279	60	34
Scarsdale	No. 1	G. & J. pneumatic.	250	60	32
Oakley	No. 1	Warwick.	250	60	31
Swift	Popular	Cushion.	275	60	35
Premier	S.	Do.	275	63	35
Premier	R.	Do.	260	66	29
Scarsdale	No. 2	Do.	175	56	34
Oakley	No. 3	Do.	140	60	35
LADIES'					
Singers	de Luxe	D. T. pneumatic.	425	56	31
Premier	H.	Do.	315	56	34
Rudge Whitworth	Standard	Do.	315	56	32
Oakley	No. 1	Cushion.	225	56	31
Scarsdale	No. 2	Do.	175	56	34

MARKET SUPPLEMENT.

SATURDAY, OCTOBER 2, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s *Weekly Coffee Report* (September 10, 1897) says:—A good demand prevailed at Public Sale this week and the moderate supplies were nearly all disposed of at steady prices.

Nearly 2,500 bags East India were brought forward; fine colory grades realised full rates and the commoner sorts sold slowly at about previous value.

Columbian, of which the catalogues chiefly consisted, attracted good competition, prices in most cases ruling in seller's favour.

Futures have been quiet, fluctuations being limited to 3d. and 6d., but at the close quotations show practically no change on the week.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending September 8th, 1897, says:—Bank rate 2%. Bombay Exchange closes at 1s 3 $\frac{2}{3}$ d. Brazil Exchange 8d. Rupee paper 3 $\frac{1}{2}$ % 63 $\frac{3}{4}$. Silver 25d per oz.

This market has been very quiet since our last Report, the lower qualities being difficult of sale at about 1s decline. Good Plantation East India, however, sold steadily at full prices. Brazil markets are flat.

The sales included :—43 casks and tierces 22 barrels and bags Plantation Ceylon sold from 91s 6d to 108s. Of 2,094 bags East India, 238 bags Mysore 68s 6d to 99s 6d, 1,259 bags Coorg 74s to 107s, 532 bags Neilgherry chiefly sold at 67s 6d to 107s 6d, 237 bags Naidoobatum part sold at 102s to 102s 6d, and 428 bags Shevaroy 80s 6d to 106s; 1,214 bags Costa Rica part sold at 66s 6d to 108s; 793 bags Guatemala chiefly sold at 63s to 81s 6d; 166 bags Salvador bought in; 1,071 bags Nicaragua part sold at 44s to 60s 6d; 913 bags Vera Paz and Coban part sold at 51s to 103s 6d; 840 bags Mexican small part sold at 63s; 3,586 bags Columbian chiefly sold 54s 6d to 103s; 660 bags Guayaquil part sold at 41s; 47 bags Manta part sold at 37s to 42s; 131 half-bales Mocha bought in; 5 bags Liberian Dominica sold at 47s 6d; 10 bags Liberian Wynaad sold at 41s 6d; 1,250 bags washed Santos good part sold at 50s to 59s.

Daily receipts in Brazil have averaged 19,000 bags in Rio, and 32,570 bags in Santos.

Futures continue to decline owing to the large receipts, and this week they shew a fall of 9d to 1s, viz. :—Good average Santos in Havre, December delivery, fcs. 41.25, in Hamburg pf. 34½, and No. 7 low ordinary Rio in New York \$6.25.

To-day's London official quotations are :—

			Sept.	Dec.	March	May	July.
RIO	...	...	32/-	32/6	—	—	—
SANTOS	...	...	33/6	33/9	34/3	34/9	35/3

We quote :—

Ceylon, mid. to good mid.	102/	@106/	Costa Rica, mid. to fine..	84/	@110/
Do. small to low mid.	80/	„ 101/	Do. ord. to low middling.	62/	„ 83/
East India, mid. to good			Jamaica, good to fine ord.	52/	„ 68/
	mid...	90/ „ 103/	Do. greenish to fine		
Do. small to low mid.	74/	„ 89/		color...	75/ „ 125/
Guatemala, mid. to fine...	81/	„ 106/	African	...	30/ „ 32/
Do. good ord. to low			Columbian, ordinary	...	48/ „ 53/
	mid...	61/ „ 80/	Do. good ord. to		
Salvador, good ord. foxy				low mid...	54/ „ 81/
	greenish...	57/ „ 58/	Do. mid. to fine...	82/	„ 104/

Receipts in Brazil compare as follows with previous years:—

			1897-98.	1896-97.	1895-96.
			Bags.	Bags.	Bags.
Rio	...	...	1,102,000	753,000	609,000
SANTOS	...	...	1,827,000	1,249,000	883,000
			<u>2,929,000</u>	<u>2,002,000</u>	<u>1,492,000</u>

Prices realized at auction for the principal Marks of East India:—

MYSORE.

		0	1	2	PB	T
S & S		99/6	84/-	68/6	96/-	62/6
Mysore	}		bid			

COORG.

	1	2	3	PB	T
Matheson's Coorg	103/-	97/-	82/-	112/-	69/6
Clutha					
—, —	100/-	91/6	78/-	109/6	70/-
Cotta Betta					
—, —	102/-	96/6	82/6	113/-	72/6
Ghatted Hulla					
—, —	104/6	96/-	80/6	117/6	70/6
Koring Kadoo					
—, —	102/6	93/6	81/-	113/-	71/-
Margoli Kadoo					
—, —	100/-	93/6	80/-	110/-	70/-
Wos Margoli					
—, —	106/6	97/6	84/6	114/-	72/-
Palparry					
—, —	107/-	90/-	75/6	105/-	69/6
Mattada Kadoo					
—, —	104/-	94/-	78/-	108/-	70/-
Watta Parra		93/6			
Matheson's Coorg	106/-	97/-	81/-	112/-	71/-
Tanneer Hulla		95/-			
—, —	101/-	94/6	77/6	110/-	67/-
Kanambaddy					
—, —	104/-	94/-	77/6	105/6	71/6
Nulla Cottay		93/6			
—, —	104/6	89/-	74/-	103/-	70/6
Ben Lomond					

NEILGHERRY.

		F	A	*B	C	PB	*T
JM	}						
Woodlands			104/-	91/6	77/-	108/6	62/6
Nilgiris							
Moutere	...	107/-	107/6	95/6	75/6	105/6	65/6

NAIDOOBATUM.

		F	A	B	C	PB	T
Balmadies	...	102/-	102/6	90/6 bid	75/6 bid	100/6	65/-

SHEVAROY.

Brooklands	}	F	A	B	C	PB	T
Shevaroy		106/-	105/6	96/-	80/6	110/6	69/-
S				95/6			

Landed last week	...672 tons.	Deliveries	...664 tons.	Stock	...12,330 tons.
Do. last year	...286 "	"	...683 "	"	... 9,886 "

SUPPLEMENT TO "PLANTING OPINION."

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated September 10th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	241,051 packages.	401,233 packages.	13,960 packages.
1896-1897...	243,660 "	350,411 "	14,923 "
37,834 pkgs. INDIAN	Total 68,448 packages were offered in public auction this week.		
29,668 " CEYLON			
946 " JAVA			

The quantity of Indian and Ceylon Tea taken by all countries outside the United Kingdom during the first six months of this year shows a decidedly encouraging increase, the total amount being 22,823,423 lbs. against 17,098,272 lbs. for the corresponding period of 1896.

Exports of Indian and Ceylon Tea to places outside the United Kingdom from 1st Jan. to 30th June, 1897 and 1896.

INDIAN.		1897.	1896.
Re-exports from U.K.	...	2,730,948	1,680,816
Transshipments from U.K. about	...	2,100,000	1,250,000
*Direct Exports from Calcutta	...	3,841,525	2,732,123
Total lbs.	...	8,672,473	5,662,939
CEYLON.		1897.	1896.
Re-exports from U.K.	...	5,427,699	3,855,161
Transshipments from U.K. about...	...	1,100,000	650,000
*Direct Exports from Ceylon	...	7,623,251	6,930,172
Total lbs.	...	14,150,950	11,435,333

* Exports from India and Ceylon direct to North America as shown in Calcutta and Colombo figures have been deducted, as they are doubtless included in transshipments from U.K.

Indian. This week's sale was the heaviest that has so far been held this season and comprised 37,834 packages, against 34,085 last week. For good Teas the market continues fairly firm, but for poor liquoring and undesirable kinds, distinctly lower rates were recorded, the fall being in some instances as much as ½d. per lb. The official wire from Calcutta gives exports to U.K. from 1st April to the end of August as 48,190,000 lbs., against 45,850,000 lbs., for the same period last season. The Indian Tea Association have circulated the following telegram:—"Weather generally in all districts is too cold for the time of the year, and is checking leaf."

Week's av. of Tea sold on Garden Account, 1897, 29,883 pkgs., av. 9d. 1896, 19,521 pkgs., av. 10½d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	12,567 p 10½	8,937 p 11½	67,595 p 11½	73,895 p 11½
Cachar and Sylhet..	8,748 p 6½	5,345 p 8	36,064 p 6½	43,688 p 7½
Chittagong	240 6½	226 p 8	826 p 5½	552 p 6½
Chota Nagpore	64 p 4½	—	148 p 5	292 7½
Darjeeling	2,837 p 1/1	2,920 p 1/1	19,196 p 11½	16,653 p 11½
Dooars	4,130 p 7½	1,428 p 7½	20,519 p 7½	18,814 p 7½
Kangra, &c.	26 5½	108 p 8½	1,977 p 7	1,487 p 7
Neilgherry	—	—	1,638 p 7	746 p 7½
Teraí	1,181 p 7½	557 p 7½	3,326 p 7½	1,638 p 7
Travancore	90½c 5½	—	11,049 p 6½	7,073 p 7½

Total sold on Garden Account 1st June to date 1897, 162,738 pkgs., av. 9½d. 1896, 165,075 pkgs., av. 9½d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	3½d	4½d	4½d	4d
FANNINGS. (Red to brown, strong rough liquor)	4d	5d	4½d	4½d
BROKEN TEA. (Brownish to blackish, strong liquor)	6d	7½d	6d	6½d
PEK. SOUG. (Blackish greyish, useful liquor).	6½d	7½d	7d	7½d
PEKOE. (Greyish to blackish, some tip, useful liquor)	8½d	9½d	8d	9½d
PEK. SOUG. (Blackish greyish, inferior liquor).	4½d	5½d	6d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor)	5½d	6d	6½d	6½d

Ceylon. The quantity brought forward, although rather heavy, was not too much for the trade and prices tended rather upwards than otherwise, all grades being well competed for. The official telegram from Colombo gives exports to U.K. from 1st Jan. to 31st Aug. as 71,250,000 lbs., against 66,500,000 lbs. for same period last year, and estimates the quantity available for the current month as 7 to 7½ millions. Average for week 7½d. against 8½d. for same time last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 803,202 pkgs., av. 7½d. 1896, 718,346 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6½d	6½d	7d	6½d
PEKOE (Ordinary leaf, little twist; fair liquor)	7½d	7½d	8½d	8d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5d	5½d	6d	5½d
PEKOE (Somewhat bold leaf; indifferent liquor)	5½d	6½d	6½d	6½d

Java. The selection comprised a large proportion of good liquoring Teas; the market was very steady. The best invoices were from Djati Nangor and Perbawatee realizing 1/0½ and 11d. per lb. respectively.

Bank rate 2 per cent. Exchange on London three months sight. Calcutta 1/4½, Colombo 1/4½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9d.) September 10th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
South Wynaad ...	26	5½	3	9½	4	5½	...	...	19	† 4½	...	...	...	...
Richmond ...	90½c	5½	...	...	45½c	6	...	...	3½c	4½	1½c	4	1½c	2½
Travancore ...	50½c	5½	...	...	35½c	6	...	...	3½c	4½	1½c	4	1½c	2½
Kinmylies ...	40½c	5½	...	...	...	...	...	...	...	...	...	...	...	...
Mahandragherry ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...

Teas marked thus † are New Season.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, OCTOBER 9, 1897.

[No. 28.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 15th October 1897.

S. E. Wynaad.

PUNDALUR, 6th October.—*Weather.*—From the 1st to 5th instant we have had continuous rains and it is too wet for the time of the year; to-day we are having sunshine. *Plant Diseases.*—Owing to the weather, leaf-rot and leaf-disease are beginning to increase in all situations and the crop dropping. *Health*—Good. *Grains.*—Rice, 1st sort, 6; 2nd sort, 7; gram, 10; salt, 7; and dry chillies, 5 seers per rupee. Surely this is affecting the poorer class very much. *Labour*—Sufficient.

Coorg.

POLLI BETTA, 30th September.—*Weather.*—Wet for the past fortnight. Heavy falls of rain on some days, but amounts registered generally small. Awful weather for time of year. *Plant Diseases.*—"Leaf" bad in parts, but coffee, on the whole, still looking fine. *Crops.*—Ripe berries here and there beginning to show up. Preparations for crops will be soon taken in hand. *Interesting Items.*—Rifle meeting commences to-day, though how any shooting is going to be done in this wet is more than I can tell.

6th October.—*Weather.*—Monday last was the first fairish day for a long time. Rain again last evening, fair this morning. *Plant Diseases.*—Rot has passed off. Although there is "leaf" nearly everywhere in parts of places, coffee, on the whole, is still looking very fine. *Labour*—Sufficient. *Health*—Fair.

Nilgiris.

KOTAGIRI, 7th October.—Abnormally wet September. Very wet every day, except from 9th to 16th, when there was a very welcome break of too short duration for man, beast and all cultivation; the rainfall for the month, spread over 19 days, aggregated as much as 9'16 in., or more than double the average due for this month, which stands at only 4'31 in., and it has only been equalled or exceeded once, that is last year, when, after the failure of the S. W. Monsoon, buckets of rain came down in September, giving a fall for the month of 12'08 in. The rainfall in the station this year to end of September has been 42'42 in. against an average due of only 30'89 in. The fall on the coffee at lower elevation has not been so heavy, say 35 in. down the Kotagiri Ghat and 30 in. more to the Eastward, Kil Kotagiri way. It has been a grand season for new openings; new clearings have very few failures and are looking very well. Crops are below the average in this direction, estates with little or no systematic

shade bearing fairly well; some places have already 4 tons in; weeds very bad this wet season, but labour plentiful and health good.

GENERAL NOTES AND ARTICLES.

An amalgamation.

We learn from the *Produce World* that the two well-known Mincing Lane firms, Messrs. W. J. and H. Thompson and Messrs. Patry and Pasteur, have been amalgamated.

Australian trees.

Writing to a Ceylon paper, Mr. Augusta Rudder, a N. S. Wales Forest Officer, comments on the excellent growth attained in the Island by many Australian trees. The Australian red cedar (*Cedrela Australis*) is recommended as a valuable addition to the existing varieties, as furnishing a light and valuable timber, of great size and rapid growth. In its native habitat this tree is yearly growing scarcer, owing both to the great demand for its timber and the ravages of grubs. Black balt (*Eucalyptus pilularis*) is also mentioned as a very quick-growing straight tree of fair timber.

New treatment of vanilla pods.

M. Dolabartz, Manager in Réunion, of the Crédit Foncier Colonial, at a recent meeting of the Réunion Syndicat Agricole upon a new process of treating the vanilla pod: According to M. Dolabartz the operation consists of drying the vanilla in an hermetically closed vessel by means of chloride of calcium in the proportion of about one kilog. for every kilog. of dried vanilla obtained. The chloride of calcium is not lost, as it can easily be regenerated by heating it in an iron or copper receptacle; one lot of chloride of calcium is thus sufficient for several processes if kept, after regeneration, in an hermetically closed vessel. According to information received, 2,937 kilogs. of raw vanilla will produce about a kilog. of prepared vanilla. It can be easily understood that vanilla dried in an air-tight vessel must lose much less vanilline than when dried by the ordinary process, by which it is exposed in the open air for several weeks.

Cocoa-prices: a curious fact.

Prices are now again on the up-grade, and the cause of the improvement is directly traceable to the low prices ruling hitherto. Encouraged by the cheapness of cocoa, a large number of new factories have been established both at Home and in the Continent for the manufacture not only of chocolate but of cocoa powder. Consumption has been thus greatly stimulated, while on the other hand supplies have been curtailed owing to the low, unprofitable prices. The statistical position is excellent, both in England and on the Continent. A curious fact, however, is the closing of the wide gap that has hitherto ruled between the prices of fine and common cocoa. Luckily there seems no danger of this happening in the coffee market.

Bone manure.

We wonder if it has ever struck our readers that, under certain circumstances, bone manure may be the cheapest *nitrogenous* manure available? For instance if a ton of bone dust, containing 3% of nitrogen, can be delivered on the estate for, say, a third of the price for poonac of 6% N., bone dust is obviously the cheapest manure to use for nitrogen alone. When its phosphates and lime are also reckoned on, all doubt on the point vanishes. But how can bones be thus obtained is the question? The answer is simple. Procure all the raw bones in the neighbourhood

and crush them yourself. Bone crushers are by no means expensive, and a water-wheel or engine, or even hand-power, will do the work cheaply and efficiently. Naturally steaming should be avoided, as very nearly all the nitrogen is thereby lost.

Dominica.

This island has large possibilities of planting development, though small enough in extent, being but 29 miles long by 16 miles broad. Disadvantages of course are not few, chief among these being lack of proper communications. Part of the island is also wind-blown, though not to any great extent. The highest point runs up to 4,740 feet, while the loftiest plateau is between 2,500 and 3,000 feet. The lower temperature, however, atones in great measure for the comparatively low elevation of the country. The rainfall varies from 67 to 196 inches. The soil is excellent, being of volcanic origin, and grows tropical produce of all sorts: coffee, limes, sugarcane and what not. The labour question is more satisfactory than might be expected, being chiefly negro, and doubtless imported labour would succeed here as well as elsewhere. The last census (1891) gave a total population of 26,800 odd persons, of whom 325 were whites, 6,806 coloured, and 19,700 black. The lack of a sufficient number of plantations, and consequently of employment, is causing a gradual decrease in the population. For the present there is sufficient labour for any extensions in cultivation in the near future. Estate wages vary from 9d. to 1s. per day for men and 6d. to 8d. for women.

Planting figures.

In the excellently got-up book of Proceedings of the Fourth Annual General Meeting of the U. P. A. S. I. are some interesting tables of statistics relating to the planting industry of South India. Names of estates and their owners and superintendents, with details of acreage, elevation, &c., are carefully given, and should certainly be found of great value as the latest reference book on the subject. The chief interest just now attaches to the proportion of young coffee to the old, *i.e.*, the expansion of the industry. Of course here the younger districts easily take the lead, as in the older and more settled localities extremely little land is now available to be planted. The percentage of increase is thus greatest on the Kanan Devans, reaching very nearly to 100%. The Shevaroyes, Nellampatties and North Wynaad follow with 51%, 40% and 39% respectively. South Mysore, North Mysore, Lower Palneys, Coorg and the Nilgiris show about 16, 13, 11, 7 and 4%. Central and South Travancore have under one and over 2%, respectively, to their credit. Taken as a whole, the coffee under three years shows a percentage of a little over 10% on the older coffee. This is of course only as regards the European plantations.

As regards tea, the three districts of Travancore lead with a total acreage of 13,041 acres, the immature plants coming to 3,400 odd. Next come the Nilgiris (total 7,177 acres: 155 young tea), Wynaad (1,032) and the Nellampatties (55 only).

Photos of a coffee plantation.

We have received a set of interesting photographs of scenes of coffee planting on the Nellampatties from Messrs. Nicholas & Co. The definition is clear, and the scenes happily chosen. We congratulate the firm on the success of their work.

Silt as a manure.

It is often said by planters that it is generally useless to attempt to replace in its original position the "wash" from steep land, more generally known as silt. They argue that all the goodness in the mineral and organic constituents have been washed out, and that the residue is little superior to pure sand. A very simple analysis would speedily convince them of their error. There is another way, however, of proving our point, and that is the great esteem in which silt is held as a manurial agent by the low-country cultivators. The canals that distribute the water over their fields leave a residue of silt on the surface, and in the majority of instances this silt is the only manure used for their crops. Where does this silt come from, unless it be from the streams that feed the river, bringing down as silt many thousands of tons of valuable surface soil robbed from the uplands. It is true that there is more than one kind of silt, and it is undoubtedly a fact that the slimy silt deposited by gently-flowing muddy water is a great deal more valuable than that deposited by rushing streams or torrents. The reason is a simple one. By virtue of their weight the heavier stones and gravel are deposited first; further down, when the rush of water is less violent, sand banks are formed. Further down still, mud and silt settles slowly to the bottom. This last contains an appreciable proportion of nitrogen, phosphates and potash. Hence the silt deposited in the beds of drains aligned at a gentle slope is greater both in quantity and value than that found in the quickly-flowing 1 in 15 drains. All roads lead to Rome, and there are branches of planting discussion that cannot be made to deviate into the ramifications of drainage.

Cherimoya culture.

Some attention is now being paid to the culture of this excellent fruit in Jamaica for the London market. The cherimoya (*Annona cherimolia*) fruit is very similar to the ordinary custard apple, but the "scales" are smoother and less defined, the seed fewer and the flesh much firmer. While as to the taste, the cherimoya is some miles ahead. Trees are growing in different parts of the Nilgiris and Shevaroyes, but have only fruited, we believe, in the latter district. The prices realized in London are excellent, and should tempt planters to undertake their culture. Average-sized fruits fetch *six shillings each*, while the largest sell for as much as 10 shillings. It is now extensively cultivated in the warm, southern slopes of Madeira, replacing the vine in the sheltered valleys formerly devoted to its culture. The trees attain a height of 30 to 40 feet and bear abundantly. Propagation is by seed only. In an interesting article on the subject, in the *Produce World*, we learn that the young trees are grafted when about two years' old, and begin to bear about three years afterwards. When the leaves have fallen in May the trees are pruned, only those branches which are likely to bear fruit being left. The crop is gathered in December and January. The fruits vary in weight between three to eight pounds, exceptionally large ones even exceeding 16lbs. The maturity of the fruit is indicated by the loosening of the seeds inside, which may be felt when the fruit is shaken. They are still quite hard to the touch but fit to pick, and if laid in straw will rapidly ripen. The fruit is always cut off with a sharp knife, leaving a short stalk attached; if pulled off, the core is injured and the pulp spoiled. Special boxes

are used for packing; the first is fruit wrapped in paper and then embedded in straw, two dozen fruit going to a box. The journey from Maderia only takes four days. From India the fruit would of course have to be packed in cold storage chambers.

A TIP TO PLANTING CLUBS: THE GRAPHOPHONE.

A CORRESPONDENT, a new arrival to one of our planting districts, gives us the following excellent description of the "Graphophone." He points out the great amusement and entertainment that could be derived from the possession of such instruments by planting clubs to the community.

"Before the cover is taken off, it looks like a small sewing machine; on removing the cover, the first thing to catch the eye is a solid steel cylinder, six inches long and about the same circumference. On this is slipped a 'record,' which is a hollow cylinder, the outer surface of which is covered with hardened brown wax, on which can be seen delicate tracery in parallel lines. A trigger which is armed with a fine agate pointed needle is then fixed on to the machine. The trigger is depressed till the agate point touches the 'record,' after which the machine is wound. To set the machine off, a small button is pressed. First a slight burring sound is heard for about ten seconds, and then one is startled by hearing a loud rancous voice announcing the name of the piece of music about to be played. Thus: 'The Russian National Hymn, played by Gilmore's famous band, for the Phonographic Society, New York City,' and immediately the music begins. The man's voice is so clear that one would think he was in the same room. The music, however, is not loud. To hear it more distinctly there are two or three contrivances. First, on a little hollow projection of the machine you fix one end of a rubber tube, six inches long, the other end bifurcates into two smaller tubes, the ends of which you place in your ears. You then hear, but much too loud to be pleasant. The second way is to remove the rubber tube, and on the projection already mentioned, fix a black japanned tin horn, eighteen inches long, the broad end or mouth of which is about eight inches in diameter. Then you hear very distinctly, and quite loud enough for a small drawing room.

"The third way, if you wish to get the full power of the instrument so as to be able to go some distance away and yet hear well, is to detach the tin horn, and in its place fix a large brass horn, three feet long, with a mouth eighteen inches wide, and then you *do* hear.

"We placed the instrument with the last mentioned horn on at one end of our sitting room, and sat in easy chairs at the other end, and heard beautifully. The harmonies were lovely, and the correct solos with piano accompaniment quite grand. We heard about thirty pieces, some of which were 'dancing on the house tops,' 'dancing in the kitchen,' 'wing dance' and many other dances, which are supposed to be danced by Negroes and Negresses. For instance, after the rancous voice finishes announcing the 'wing dance,' you hear another one apparently addressing the orchestra, thus:—'Now you niggers, do you know the wing dance?' Chorus replies—'Of course we do, you nigger.' Then the first voice again, "Well, I have a tender one under my wing, and she wants to dance, have

haw, so strike up." Immediately the bones (taking the place of drums) begin, ruk-a-tuk-tuk, ruk-a-tuk-tuk, and the music begins. Amidst it all you hear shouts, loud laughter, screams of mirth, sounds as though some couples had fallen, and were rolling about on the floor. A most lively, mirth provoking piece.

"Then comes another class of music, 'The anvil chorus,' 'Jubilee singers,' 'The forge in the forest,' &c. This last I must describe. Immediately the announcement finishes, you hear five bell-like strokes on an anvil. Then a cock crows loudly, and the music begins, in which the anvil takes the place of a drum. Another class of music is the correct solos, some of which were 'Scenes that are fairest,' 'Yankee Doodle,' 'Suanee River,' 'Old Folks at home,' &c., all with variations, and with the most lovely piano accompaniment.

The funniest of the many funny pieces is the 'Virginia Skidaddle,'—you hear a great row, as though hundreds of people were 'hooking it,' screams, laughter, and shouts, the music and the bones go prestissimo, and the whole thing made us laugh heartily. By an accident we discovered a small button, which if pressed, causes a word or phrase to be repeated until you release the pressure. So when the rancous voice was announcing 'The Virginia Skidaddle,' we stopped him at 'daddle,' and he went on shouting 'daddle, daddle, daddle' with a strong emphasis on the 'dad,' as though he were in a great rage at being compelled to repeat himself so often. It was excruciatingly funny, and we nearly expired with laughing.

"These instruments cost about Rs.300 each, and Re.1-8 for each 'record,' and could doubtless be obtained from New York, where they are made, through any large musical firm in this country."

THE TRADE IN KAPOK.

AN INCREASING DEMAND.

WHAT is Kapok? How many persons in the commercial world in general, or even in the close corporation of Mincing Lane in particular, could answer. Kapok is the Dutch name for the seed hairs of the white silk cotton tree, scientifically known as *Eriodendron anfractuosum*, which grows throughout the East Indies, the Java variety being regarded as the best. It is, however, too short in staple, too smooth, and too soft to be spun into yarn. Its chief use is for stuffing pillows, mattresses, and sofas, where its lightness, immunity from moth, softness and elasticity, render it superior to all but the best qualities of feathers, wool, and hair. *Eriodendron anfractuosum* is a lofty forest tree, with a large straight trunk, covered, when young, with prickles. The branches are horizontal, and arranged in whorls. In Java, the growing trees are commonly used for telegraph posts, as the branches grow so conveniently at right angles to the trunk that they do not interfere with the wires. The flowers are large and white, and are followed by dry, cucumber-shaped capsules, filled with black seeds embedded in silky hairs. The seeds are sometimes eaten. They yield a bland, fatty oil, the residual cake being used as a cattle food. In India the tree yields an almost opaque dark red gum, which is said to be astringent, and has been used in tanning. From the bark there is sometimes prepared an inferior reddish fibre which is used locally for making ropes and paper. It possesses, however, no commercial value, and the barking of the trees would not compensate for the injury done to them as a source of floss.

The kapok, or floss, is, according to present demand, a fibre of considerable importance. It is said that its elasticity and harshness prevent it from becoming matted like the generality of flosses. It is important, as pointed out by Dr. Watt, to guard against an error into which many writers fall, of viewing kapok as a generic trade

name for all silk cottons—including that of the simal—the floss of *Bombax malabaricum*. When the demand for kapok first started, Indian exporters placed on the market a quantity of very dirty simal, having a large percentage of dust as well as seed. This was at once condemned, and was sold at a price that would not cover the transport charges. India thus fell into an inferior position, which might have been avoided if carefully cleaned fibre had been sent to Europe.

Serious complaint is made in Australia and elsewhere of the quality of the kapok shipped from India. "Even at the low price of the Indian article, it is found better to pay 8½d. or more per lb. for that grown in Java. The former is frequently received in such a filthy condition as to be almost unsaleable." The hydraulic or steam-press packing of kapok tends to destroy that peculiar elasticity to which it owes its value. In addition the packing tends to press a dark coloured oil from the seeds left attached to the fibre, and hence a noticeable difference in colour between the Indian and the beautifully white Java products. At the latter islands the trade has adopted a uniform practice. No unclean kapok is shipped, but the different grades of cleaning denote standards of quality; the first "extra cleaned" is the first picking of the crop, and is cleansed by machinery; the second, denoted as "best cleaned picked," is all hand-picked and free from seeds, except an odd one here and there; the third is simply designed "cleaned." It contains a few seeds, together with the "slubs," or little knotty curly lumps, which are cast aside from the higher grades. Packing is all done in straw mats and the floss is never tightly pressed. The first quality, "extra cleaned," weighing about 65 lbs.; the second and third from 75 lbs. to 90 lbs. Bales over 90 lbs. to 95 lbs., on account of having to be dumped by machinery, destroying the elasticity of the fibre, are reckoned not to be worth within ½d. to 1d. per lb. in value of bales of lesser weight. In fact, it is a peculiar feature of the Java trade that weight of bales form an essential condition of price—the lightest the highest, and vice versa.

In Ceylon kapok is collected throughout the villages of the interior. The season commences in May, and one crop is obtained each year; the tree reaches maturity about the fifth year. Australia receives large shipments of kapok both from India and Java, but it is difficult to obtain reliable statistics concerning the trade. It is entered at the local Customs under all manner of names such as "vegetable fibre," "vegetable wool," "silk cotton," "raw cotton," and "simal cotton." So much attention is kapok receiving in the East Indies that the cultivation of the trees is even said to be ousting coffee. Kapok has not been received in England on a very large scale; 200 bales a month are sent from India and Ceylon (one bale equal to 200 lb. Ceylon, 400 lb. Indian), and the price in London varies from 3½d. to 5d. for raw, and 6d. to 9d. when cleaned.

The Editor of the PRODUCE WORLD invites suggestions from Planters on this subject, and will be pleased to put Growers in communication with London and Continental buyers.—*Produce World*.

LETTERS TO THE EDITOR.

TEA: LIME FOR COFFEE.

DEAR SIR,—Will you or any of your readers very kindly advise me on the following:

1. The best jât of tea to plant and where to obtain the seed.
2. The best way to apply lime to a field of coffee, whether in the hot weather or after rain.
3. Should the lime be used slaked or unslaked.

"COFFEE."

[District Mysore, the land for tea, averages 250 inches of rain.—ED.]

STORAGE OF POONAC AND BONES.

DEAR SIR,—I am writing to enquire whether bone or poonac meal can be kept in store for any length of time—say two seasons—without deteriorating in its fertilising elements. Owing to short crops chiefly, and difficulty of securing labour in time, large quantities of manures have been held back this season. What I wish to know is whether they will be as valuable as newly crushed bones or poonac after being stored for a year or more. If manures deteriorate even when kept under shelter, it would be a benefit to know what the planter

is to do under the circumstances. Refuse to take the stuff, or ask for a reduction in the price? I trust that some of your readers will kindly enlighten.

ALIQUIS.

HUMUS IN COFFEE.

DEAR SIR,—Allow me to reply briefly to “H. G. R.” I have every respect for the authorities he quotes, and should not attempt to disprove the theory that under certain circumstances a great excess of humus (once such an excess of humus is established) will cause sourness and foulness. My remarks were made with reference to his criticism of Mr. Nelson on page 528 of the *Planting Opinion* for August 28th, 1897. “H. G. R.” there says: “To my objection that the well-known dangers of an excess of humus would be likely to arise from constantly applying *E. Lithosperma* cuttings, he replies in effect that this is impossible and says that on the contrary, as it is difficult to preserve what humus there is on coffee land, there is very little risk of increasing it to an undesirable extent. Why I find it impossible to agree with Mr. Nelson will appear presently.” From this it is evident that the question is not whether a certain excess of humus is harmful or not, but whether it is possible to establish such an excess by applying *E. Lithosperma* cuttings for a series of years. My experience is that the whole humus contained in the surface soil of a primeval forest plus that contained in all the stems, boughs and leaves (unburnt) of the heaviest known forest on the Ghats did not cause such an excess. Nor have I been able to establish such an excess by repeated applications of humus on the same land beginning some ten years after it was opened unburnt.

Further, “H. G. R.” says in his letter under reply: “I can perfectly understand why too much humus *cannot* be applied in the way of spreading vegetable matter on the land and covering with the soil out of renovation pits.” I understand Mr. Nelson does not propose burying his cuttings at a great depth; anyhow he could apply them as a surface mulch. Assuming he does so, it seems from my experience and “H. G. R.’s” own showing Mr. Nelson is right in saying there is very little risk of increasing humus to an undesirable extent by constantly applying *E. Lithosperma* cuttings.

J. W. H.

KUTCHA BUNGALOWS: SOME QUERIES.

DEAR SIR,—Can some of your readers help me in any of the following difficulties. Firstly, as to preventing iron roof from sweating. The roof in question is a very low one, and, owing perhaps to the dampness of the room generally, sweats in a terrible way at night, making a horrid mess of everything. I tried whitewashing, but this has only made things worse than ever. I may add that I have already put a thick layer of tiles over the iron. As a last resource I am putting up a ceiling-cloth. The house being only a kutchha one, none but the cheapest of remedies are solicited.

Being in urgent need of buildings on my estate, &c., for stores, godowns, &c., I made a number of them in wattle and daub, as brick-making was impossible owing to the continuous rains. I am not at all satisfied with the result and shall have to replace them with better buildings in the dry weather.

In other districts, notably in Coorg and the Wynaad, I believe a very favourite substitute for brick is rammed earth, and the one or two bungalows I saw made in this way looked extremely well. As I can’t burn good bricks on the estate, I have to get them from a distance at a cost of about 10 rupees per thousand. Building them up in mud and chunam plastering inside and out will cost me, everything included, about 25 rupees per 100 square feet of wall, $1\frac{1}{2}$ brick in thickness. How does the cost of rammed earth compare with this? Is it possible to make double stories with this material?

If the cost is appreciably less, say Rs.10 or Rs.15 per 100 sq. feet, I should be extremely obliged for full particulars of the process, special attention being paid to the following points: Exact description of mould or boarding required; best kind of earth; thickness of wall for given height; whether beams or wooden supports should be built in the walls to support the roof; or whether the roof would rest simply on the wall-plates; if foundation of stone or brick is required; what kind of plaster is used for the walls.

The roof I should intend using in any case would be iron sheeting and tiles. By the way, what is the cheapest galvanized iron roofing in the market per square foot?

I see a great many queries in your paper, but very few answers! I hope this will be different in this instance.

KUTCHA.

COFFEE.

Grevelleas.

They are so taken with the great value of grevelleas in tea, that Ceylon planters are now asking themselves whether, if planted out in their now abandoned coffee, their old favourite might have been saved. For an answer, they need only turn to South India, where the silver oak enjoys enormous popularity.

Dangers of irrigation.

All river or well water contains in solution appreciable quantities of sodium-salts, more especially in the dry weather. If persistent use is made of irrigation water, and sufficient care is not taken to ensure the most thorough drainage, these salts accumulate in the soil, being rejected by the plants growing thereon. In course of time the proportion of sodium-salts is absolutely inimical to plant-life, and then results those barren wastes of land known in Northern India as the Reh or Usar Plains. Numerous attempts have been, and are still being made, to reclaim these deserts but with very indifferent success.

It would be well for the thriving young coffee industry in the neighbourhood of Bangalore and Mysore to take the greatest precautions to ensure the most thorough subsoil drainage practicable.

East Java.

Very hazy ideas exist on the resources and conditions of Java. It is, to quote a contemporary, the gem of the Dutch Indies. It covers 50,554 square miles, and has a population of over 25 millions. Of Europeans, too, Java has a very considerable number. At the end of 1894, it had over 1,000 miles of railway open. The authorities are very desirous of attracting foreign capital, and, by their generous treatment of settlers, aided by the magnificent soil, have accomplished a great measure of success. A canny Dutch regard for their own feelings, has led to their offering their greatest inducements for foreigners to be located as much as possible in the one extensive and hitherto *unoccupied* district.

But the strongest note is struck by Mr. Mackay, an old Ceylon planter, in a letter describing some Ceylon-planted coffee gardens in East Java. Of one in particular, a large one of 1,300 acres, the crop for three and four year old Arabica coffee is something like ten cwt per acre!

Labour is said to be good and ample, but rather more expensive than in Ceylon, the standard being a gold one.

Brazil Crops.

The following statement shows the total Coffee crop in Rio and Santos during the last fifteen years, commencing July, and ending June 30 :

	Rio. Bags.	Santos. Bags.	Total. Bags.
1896-97 ...	3,552,000	5,103,000	8,655,000
1895-96 ...	2,399,000	3,081,000	5,480,000
1894-95 ...	2,712,000	3,987,000	6,699,000
1893-94 ...	2,588,000	1,702,000	4,290,000
1892-93 ...	2,980,000	3,213,000	6,193,000
1891-92 ...	3,722,000	3,664,000	7,386,000
1890-91 ...	2,395,000	2,913,000	5,308,000
1889-90 ...	2,351,000	1,869,000	4,220,000
1888-89 ...	4,124,000	2,611,000	6,735,000
1887-88 ...	1,921,784	1,120,043	3,041,827
1886-87 ...	3,500,234	2,587,912	6,088,146
1885-86 ...	3,887,618	1,668,965	5,556,583
1884-85 ...	4,117,116	2,095,435	6,212,551
1883-84 ...	3,186,696	1,871,384	5,058,280
1882-83 ...	4,742,969	1,967,880	6,710,849

Stocks in Europe.

The following statement of the total stocks of Coffee at the principal ports in Europe on the first of each of the past twelve months, compared with corresponding dates in previous years, is taken from Messrs. Dauring and Zoon's report:—

	1896. Tons.	1895. Tons.	1894. Tons.	1893. Tons.
September ...	83,650	91,750	61,650	110,050
October ...	82,950	88,650	55,750	95,700
November ...	82,100	90,500	60,200	86,150
December ...	86,700	92,050	64,920	77,900

	1897.	1896.	1895.	1894.
January ...	98,750	100,600	69,150	78,200
February ...	106,700	101,150	70,450	73,000
March ...	117,050	102,900	75,300	72,150
April ...	134,200	101,300	88,850	72,550
May ...	140,600	102,800	97,000	75,350
June ...	143,000	99,450	94,750	79,150
July ...	141,750	96,200	101,500	78,600
August ...	132,200	91,400	94,600	71,550

TEA.**The American sieve-test.**

The latest news shows that the attempt to alter the present sieve-test at the American customs has been unsuccessful. This means that for the present at all events a decided check has been put on the importation of "fine" British-grown teas, though the coarser grades will enter without hindrance. It is shrewdly suspected that the whole episode is a move on the part of the traders in China and Japan teas to prevent the development in Indians and Ceylons.

Final firing.

Writing to a Ceylon paper, an Indian planter wrote for instructions on the final firing of teas. The reply thereto by "5,000 feet" states that the great mistake in final firing is allowing the process to proceed too long, even though the temperature be a low one. The best results are got by the writer in a Dessicator, firing at 220°, using one chamber only and spreading the tea half an inch thick on the trays. When the tea is slightly heated, the odour is rather unpleasant than otherwise, but when hot, all flavouring tea gives off a fragrant aroma. As soon as this begins, it is time to stop.

Banjhi leaves.

A writer in a Calcutta exchange asks the question: what is a banjhi leaf, and proceeds to answer it in a very interesting way. Space allows us to quote only the practical part of the letter. The word "banjhi"—note the spelling—is derived from the adjective "bānjh," which means barren. As applied to tea, it indicates that the terminal leaf on any shoot (long or short) has a more or less dormant eye at its footstalk or axil, and that the growth of the shoot in length is arrested. All varieties of tea throw banjhi leaves, most at the sides and edges. Growth being arrested at times of flowering and seeding, banjhy leaves are then frequent. Being the last leaf on a shoot where the eye is dormant there is no tip, and, having less sap, are stiffer, more leathery and of poorer quality. Anything that arrests growth results in banjhy leaves forming; among these causes are want of cultivation and cold dry air. Lightly pruned bushes are specially liable to banjhy.

The Calcutta Sales.

The last sale before the Pujas was held at Calcutta on 29th ult. when 16,700 packages were offered and about 16,350 sold.

Messrs. W. S. Cresswell & Co. report:—

The selection was not very good, there being a lot of liquoring teas catalogued. The few Assams offering in some cases showed rather better quality than previous invoices of same marks. Cachars and Sylhets were still rather wanting in cap, and the Duars were not quite so good as they have been. The few Darjeelings were fair, and in some cases good, for the time of year. At the commencement of the sale prices were inclined to be a little irregular, but soon settled down, bidding being brisk and prices generally firm for all descriptions. Low-priced teas here and there shewed a slight inclination to advance. Exchange closes at $1/3\frac{2}{5}$. The first sale after the Pujas will be held on the 15th October, prompt Monday, 25th October. Since the opening of the season on the 15th May, 17 sales have been held, totalling 279,578 packages in all; and in spite of the fact that quality was poor for the first few sales, and the estimated crop considerably larger than the previous season, with heavy stocks held in London, the average sterling equivalent comes out exactly the same as the corresponding period of last year, although the rupee price is fully an anna less, owing to the higher exchange.

To economize labour on tea-gardens.

The interesting correspondence still running in the *Ceylon Observer* repeats, with a few variations, the summary already given by us of the first few letters. A strong consensus of opinion is in favour of the multiplication of wire-shoots for conveyance of leaf, fuel or manure. If stretched at an easy gradient, the damage done to the leaf is only nominal. Tramways are mostly dismissed as impracticable on the majority of estates. Handcarts are generally advocated as relieving coolies of the work they most desert, i.e., transport of goods, etc., on their heads, while light single carts have also strong advocates for the same reason. Stress is laid on the waste of water-power that is now allowed, as though engines may be necessary for a part of the year; water-power could take their place with great economy the rest of the time. Clean-weeding is almost unanimously supported as the *ne plus ultra* of hill cultivation. The growing and digging in of even leguminous weeds is condemned all round on account of the loss of soil resulting from loosening the earth. Attention is drawn to the value of tea or cus-cus hedges, especially the former, above roads and drains in preventing loss of soil by wash. Terracing of course is a counsel of perfection, unattainable only on

account of its expense. The Editor's query as to "selected weeding," i.e., leaving moss, ferns, etc., to grow, is rejected, mainly on account of the bad effect of moss on the tea. This we should have thought was fairly obvious. As to drainage, all are agreed that drains should not be too far apart, nor should their gradient be too steep. A world of virtue lies in the application of the word "too." Silt-pits at frequent intervals are also recommended.

Manuring: side roots. The following advice given by a Ceylon planter to a contemporary is worthy of notice, though we think there is something to be said on the other side. Granting for the moment that the cutting of side roots of tea is distinctly harmful, our readers will find it well worth their while perusing our remarks on surface manuring in our "Coffee Notes." Without ceaseless supervision, side roots are bound to be cut or injured if the manure is applied in pits.

This is the extract referred to:—

"There is one thing in Ceylon not half attended to, and that is, when applying manure either artificial or bulk, to be careful not to let the coolies cut the roots of the tea, the main side roots, I mean. I have seen a lot of careless work done in this respect. The tree will expend its energy in making fresh roots, using up the manure in the attempt, instead of its going to strengthen the whole tree, and make it flush more freely. For this work mamoties should be forbidden, and forks or a blunted short scraper used. I think it folly manuring tea, too, when old coffee stumps with feeding rootlets are allowed to remain in the land. These should all be removed if manuring is to be done."

On the other hand, where digging and forking is the rule, it is quite impossible to pursue cultivation in a thorough manner *unless* the side roots are cut. The usual alternative is to allow roots being torn and turned up out of the soil; certainly far more harmful than careful cutting back within a short distance of the stem. In this case, we would feel inclined to recommend making trenches of about a foot deep all round each stem, and cutting off all side roots above that depth with a knife. The shock that would inevitably ensue must be counteracted by a liberal supply of manure, say a pound of poonac and bones per tree. The effect would be that the lower side roots would develop themselves, and throw up fresh feeding roots from below. Digging and forking would injure the large roots no more, and cultivation could be as thorough as it is now "shoddy."

In Northern India, especially on the plains, exactly the same results are attained, we believe, by the garden being deep-hoed in its early youth, before the side roots are developed. Subsequent deep-hoeings check all tendency for side roots to form above a certain depth of soil.

Wind-belts.

The great difference in temperature between different fields, of even the smallest gardens, is largely explained by the amount of shelter provided either by nature, or artificially. Considering what an easy matter it is to grow suitable wind-belts, it is extraordinary to note the general inattention paid to the matter. For there is no doubt that, besides lowering the actual temperature, winds usually have a marked effect in retarding growth. On the other hand, patchy and incomplete works in this direction is to be strongly deprecated. Single rows of trees planted both far apart in the line and at a great distance between the rows will render the minimum of assistance. According to the variety of tree chosen, the wind breaks should be belts, not

rows, six to ten lines deep. Naturally a great deal depends on the tree, and Bluegums are far too generally employed. It is a most undesirable tree to employ, as it impoverishes the soil all round to an extent incredible to any but careful observers, while nothing will grow under its shade. Far better than the gum is the favourite grevillia, which is such an enormous favourite in Ceylon. Its abundant litter mitigates wash and adds largely to the stock of humus in the soil. The timber is excellent, and its value as fuel is considerable.

A better tree even than the grevillia would be the famous *E. lithosperma*, which, besides its well-known manurial properties, gives a very good fuel. A good deal of discretion must be exercised on the choice of sites for the wind-belts, and the line they should take. Until the trees are thoroughly established, and of respectable size, it is obvious that the number and width of the belts should be at least double those finally requisite. Anyway the old whist rule holds good: when in doubt, play trumps, i.e., allow a good big margin of trees over and above your estimate.

The evil effects of shade on the quality of the tea should of course be continually borne in mind, but it is a choice of two evils; for wind-blown tea is at least as bad as shaded tea, and is a great deal less in quantity.

To revert to the site to be chosen for the wind-belts. In enclosed valleys, the wind will always blow up or down, never across. At the head of the valley, this rule is not a safe one, and only personal observation can decide the point. Again, elementary as the caution may seem, it is quite useless planting wind-breaks in a hollow, following the line of depression. Ridges should be the site *par excellence* for wind-breaks, and the size of the pits in stony and barren soil should be of generous proportions.

FERMENTATION.

THE following article from the *Indian Planters' Gazette* will be sure to be read with interest by all tea-planters, though the inference drawn by our contemporary, that the fermentation of tea is real fermentation, is by no means justified. The initial changes are far more likely to be due to oxidisation, as demonstrated by Bamber, than to real fermentation:—

(i) What is real fermentation?

(ii) Is it either possible or probable that real fermentation can take place in the manufacture of tea?

The researches of Pasteur led to the following conclusions regarding fermentation:—

Fermentation is produced by the action of living germs or cells on the substance to be fermented. These cells or germs may be of three kinds:—

1st.—The living cells which exist inside fruits.

2nd.—The germs or seeds of plants.

3rd.—The germs of animalcula.

In the first instance what takes place is this: The cells take oxygen from the saccharine juices of the fruit, throwing off carbonic acid and producing alcohol. If these cells are broken or injured by gushing or other means, they are powerless to effect this: everybody knows the unpleasant hot flavour of a pine-apple that has been kept too long. It has lost its sweetness and has acquired instead a peculiar burning taste. What has taken place is neither more nor less than fermentation. The living cells which exist in the pulp of the fruit have absorbed oxygen from the sweet saccharine juices, and have by doing so, produced alcohol, which is the cause of the burning taste.

The second instance arises from a very different cause. We now have the germs or seeds (as they really are) of a plant acting exactly in the manner we have described, in a foreign substance. This is

the sort of fermentation that comes into play in the manufacture of beer and wine. The brewer first steeps his barley for a certain time in water, then drains and subjects it to a gentle temperature sufficient to cause it to germinate; he then dries it on a kiln, and calls it *malt*; he now grinds and mashes it up with warm water, boils it with hops until all the soluble parts have been extracted, and obtains an infusion which is called *wort*. He has now got to ferment this, and for the purpose uses the seed of a minute plant called *Torula cerevisia*. Yeast is a fluid containing these seeds in suspension, and the admixture of the yeast with the wort is simply the sowing of the seeds of the *Torula* in a congenial soil. These seeds sprout and grow, but in order to do so they require oxygen. They accordingly take it from the sugar contained in the wort, turning it (the sugar) at the same time into alcohol, and acting just in the same way as the life-cells did in the case of the pine-apple. In the manufacture of wine, yeast is not required, simply because the seeds of the *Torula* are found on the outer surface of the ripe grape ready to hand. Break the skin, and the seed is sown, and forty-eight hours afterwards we find it sprouting into growth with all the usual phenomena of real fermentation. The result of fermenting *wort* with *Torula* is the beverage called *beer*. The result of fermenting the *must* of the grape with the seed of the same plant is *wine*. Were germs of other ferments sown in the wort or *must*, fermentation would ensue, but the results would not be palatable. The maladies of beer are owing to its being contaminated by germs floating in the air which are not those of the *Torula*. The plants which spring from these objectionable seeds are not nourished in the same way as the *Torula*, and consequently the result is not *beer*.

The *third* instance is that in which the germs or eggs of animalcula are sown; in short, when animal and not vegetable life is the fermenting power. When milk turns sour or putrefies, the cause is to be sought in the presence in it of curious eel-shaped organisms; the sourness being due to an animalcula called *Vibrio*, and the putridity to a different one called *Bacterium*. These animalcula float in the air, and are the direct cause of milk going bad. Keep your milk in air free from them and it will never go sour or putrefy. Take an ordinary tin of soup, open it and leave it exposed to the air in a room; it will putrefy in a certain period, which will be longer or shorter according to the temperature of the atmosphere. Open a similar tin in air which has been freed from such germs, and it will remain perfectly pure. The bacterial eggs which float in the air of a room fall into and are hatched in the soup. They then breed and multiply at a marvellous rate, totally altering the composition of the soup; and the result is *putrefaction*, as it is commonly called, which is really due to fermentation.

We have thus *three* phases of fermentation. In all three the causal force is to be found in the life existing in cells, or seeds, or eggs, and the question is, does any such process take place in the manufacture of tea? The process of *rolling* expresses the *juices* of a leaf, and among them appears *tannic acid*. Fire the leaf immediately after it is rolled, *i.e.*, without fermenting, and after infusion note flavour of liquor and colour of outturn. The liquor tastes harsh, pungent and raspy, and is quite unpalatable. It wants *body*. Compare with leaf that has been fired after having been *just sufficiently fermented*, and then with leaf that has been allowed to *over-ferment*. Planters know full well the results, so we need not enter into particulars, as they can draw their own conclusions.

• SHORT STORY.

MORE KASHMIR TALES.

I LEFT Srinagar after I had only been there two days or so and went back to Rampore, which much reminded me of Scotland and Switzerland. I felt very lonely without my friend X, as even after his departure I had not been quite so much alone as I now was. I stopped a day or two at Shadipore, which was getting very lovely, for the leaves were mostly out by this, and the trees in their young spring coats were of the most vivid colours. I found the cold at nights very pleasant, but my old servant went about grumbling and trying to keep warm in the thickest clothes he could lay hands on. From Shadipore I dropped down to the lake, and had some duck and snipe shooting, and there met Col. Longshanks and his wife and daughter. He was a great shikari, rather reserved and cold at first, but a real good fellow when you got to know him. Monsieur LeCocq, a very old Kashmir resident and friend of the Colonel, was also there. He's a widower, and, strange for a Frenchman, not

only a good business man, but a great tracker and shikari. I can pay him no higher compliment than to say he ought to have been English. The Colonel's wife was a great invalid and hated the cold, and the temperature of her houseboat was a great contrast to that of the outside air. Their daughter was a long colourless slip of a girl who used to accompany her father out shooting. She detested the jungles, and longed for Srinagar, where there was, at any rate some society, but we did not hit it off well, as though she was glad to see a young man, she was a trifle trying. She would be most cordial one day, and then without rhyme or reason as cold as ice the next; perhaps she found M. LeCocq rather hard nut to crack. I cleared out rather quicker than I might otherwise have done, as I heard a man enquiring my name one day; and on hearing it said he was not sure but he had a message for a young sahib from a native lady; it was for me and from Chota Begum, but I told him it was not, and that the sahib for whom his message was was somewhere else. Then I went to Bandipore and on to Attawat Nullah about 17 miles off. I stopped at Kraalpara for three days and tried for the big bear there. Kraalpara is at the foot of the Traajbad Hill. The Gilgit road here leaves the main valley to cross the first pass on the way north. I did not get the bear. I only saw it once 300 yards away. At Attawat I found it very cold; rain in the valley meant snow at night. I only had one bit of luck. I saw two bears about a mile away from me, and about half a mile apart, one black, one red. I left my chota shikari to watch the black and went after the red one with my head shikari and tiffin cooly; though only a mile away across the nullah, it was three miles to him, for I had to go up half mile and then half a mile down. He had a real good coat and was feeding on the young grass that was growing up in patches among the snow. My shikari and I were some 20 yards ahead when we heard a yell behind, and saw a most comical sight. The tiffin cooly in following up had slipped, and he and a good big patch of snow were sliding down on us. We got out of the way as best we could, and then turned to look at the bear, for the man and the snow were sliding straight down on him. He turned and bolted, but the snow went faster, and in half a minute snow, man and bear were all rolling down the hill together,—the man yelling, the bear roaring. We ran after them shouting with laughter; luckily there was a small hollow about 100 yards below, where they all brought up, and both picked themselves up, both more frightened than hurt. The man bolted one way and the bear the other, but not fast enough, for I got a right and left at him. The right hit him hard; but the second seemingly missed, and away he went in the direction of his black cousin. We followed as hard as we could and managed to keep him pretty close, but yet not near enough to make good shooting; suddenly he disappeared over a knoll, from the back of which began a devil of a row—grunting, growling and groaning. When we got to the top, we found him and the black one about 20 yards off and going it hammer and tongs. We were quite close, but they did not notice us, for we had the wind; claw and smack, grunt and growl; there seemed no love lost; we watched them for two or three minutes, and then as I was afraid their coats might get spoiled, I waited my chance, and seeing the red one was badly hit and getting rapidly weaker, I shot the black one in the side of the head and he pitched over dead and began to roll down the hill. The red one looked about him stupidly for a bit, and before he'd a chance to do more, I shot him behind the shoulder: he sank down with a grunt, not quite dead, and rolled down after the black one. When we got down to them he was still groaning but dying fast; in fact, in five minutes it was all over, and we set to work to skin them.

BALLOON.

AT THE FALL OF THE LEAF.

WHY do the leaves fall? "Bless me, I don't know," you answer: "I suppose because it is one of nature's arrangements."

Precisely; but why did nature so arrange? Why not have summer time always, with perpetual foliage? What is the meaning of denuded branches, withered flowers, daylight fading in mid-afternoon, and winter's cold and desolation? When you find out why the leaves fall, you will have discovered one of nature's deepest secrets—*why men die*.

Suppose we try an easier problem. Why should Mr. William Steel have written such a sentence as this?—"At the fall of the leaf every year I got into such a state that I took no pleasure in anything."

No doubt there are minds so highly strung as to feel keenly the influence of outward conditions, changes of the weather and of the seasons, and so on. But they are rare, and for practical purposes they ought to be rare. Our friend Mr. Steel, happily for him, was not one of them. All the same he was a miserable man every time the leaves began to rattle to the ground.

Here's the way he puts it: "At the fall of the leaf every year I felt languid, tired and weary, and took no pleasure in anything. My appetite was poor, and after everything I ate I had pain and fulness at the chest and sides. Then there was a horrible pain at the pit of the stomach, which nothing relieved."

Now this sort of thing would spoil a man's pleasure any time of year, but the oddity in Mr. Steel's case is that it always coincided with what you may call nature's bedtime.

"After a few months," he says, "the pain and distress would be easier for a while, but as autumn approached I became as bad as ever. In September 1890, I had an unusually bad time of it. I couldn't touch a morsel of food, and presently got so weak I was unable to stand on my legs. Every few hours I had to be poulticed, the pain was so bad. I went to bed and stayed there for a week, with a doctor attending me. He relieved me a little, but somehow he didn't succeed in getting to the bottom of my ailment."

That may be, but it doesn't quite follow that the doctor was in the dark as to Mr. Steel's ailment. He might have understood it right enough, yet failed to cure it because he had no remedy for it among his drugs. That happens all the while. Still, the reader may ask, What's the good of knowing the nature of a complaint if we possess no medicine to cure it? There you have us; no use at all, to be sure.

Well, Mr. Steel goes on to say: "For some time I continued very feeble, and was hardly able to walk across the floor. If I took a short walk I felt so tired and done up I didn't know where to put myself. This was year after year for six years.

"Finally I read about the popular medicine called Mother Seigel's Curative Syrup, and made up my mind to try it. So I began and kept on with it for some time. The result was that the pain left me, and my appetite waked up, and my food tasted good and digested well; and presently I was strong and hearty as ever. That was three years ago, and the trouble has never returned. (Signed) William Steel, Hambleton, near Oakham, Rutlandshire, Dec. 5th, 1893."

Mr. Steel is grocer and postmaster at Hambleton, and his case is well known there. His complaint isn't hard to see through; it was indigestion and dyspepsia. But why did it come on only in the autumn? What had the fall of the leaf to do with it? Let the reader study on that point.

Meanwhile it is a comfort to know that Mother's Seigel's Syrup will cure it, no matter when it comes on.

IF SURGEONS DISAGREE AND PHYSICIANS COINCIDE NOT,
THEN WHY NOT TRY
STEEL'S AMERICAN BALM.

HUNDREDS HAVE TESTIFIED TO IT
THOUSANDS HAVE COMMENDED IT

AS BEING

A sure and certain remedy for Rheumatism, Neuralgia, Lumbago, Sciatica, Muscular Stiffness and other Articular and Nervous Complaints.

Sold in pots, 12 Annas.

Sole Proprietors,

COLLINGWOOD & CO.,
PHARMACISTS,
MOUNT ROAD, MADRAS.

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P. THOMPSON & CO., Ootacamund, Engineers and Contractors.

MARKET SUPPLEMENT.

SATURDAY, OCTOBER 9, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (September 17, 1897) says:—Public Sales have been on a small scale this week, and the supplies brought forward were readily disposed of at fully previous rates.

About 2,200 bags East India sold steadily for ordinary and medium qualities, whilst fine colory grades realised extreme rates.

Good prices were obtained for the moderate supplies of Central American catalogued, fine colory Guatemala showing 1/- advance.

Futures mark a rise of 1/3 since our last in consequence of reduced estimates of present Santos crop, but prices close 3d. off the best.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending September 15th, 1897, says:—Bank rate 2%. Bombay Exchange closes at 1s 3½d. Brazil Exchange 7½d. Rupee paper 3½%. 63½. Silver 25½d per oz.

This market continues quiet, good qualities still realizing firm prices, whilst common sorts shew no improvement. Brazil markets are steady.

The sales included:—158 casks and tierces 63 barrels and bags Plantation Ceylon at 85s to 116s. Of 2,918 bags East India, 223 bags Mysore sold at 73s to 98s, 644 bags Coorg 71s to 107s, 1,974 bags Neilgherry chiefly sold at 64s to 108s, 77 bags Wynaad bought in; 223 barrels 44 bags Jamaica chiefly sold at 55s to 122s 6d; 22 bags Costa Rica bought in; 1,138 bags Guatemala chiefly sold at 53s to 94s; 115 bags Vera Paz and Coban 50s 6d to 96s; 937 bags Salvador 47s to 83s; 530 bags Nicaragua chiefly sold at 49s to 58s; 164 bags Mexican 57s to 67s; 2,551 bags Columbian chiefly sold at 52s 6d to 100s; 82 bags Peruvian part sold at 49s; 30 bags Bolivian 73s 6d to 74s; 4 bags Liberian Wynaad bought in; 120 half-bales Mocha bought in; 106 bags Caravellas bought in; 241 bags washed Santos bought in; and 250 bags Santos on quay terms bought in.

Daily receipts in Brazil have averaged 12,625 bags in Rio, and 31,625 bags in Santos.

Owing to reports of heavy rains in Rio, and the Brazil receipts shewing a slight diminution, the market for "Futures" has been steady, with quotations unchanged to 6d dearer, viz.:—Good average Santos in Havre, December delivery, fcs. 41.75, in Hamburg pf. 34½, and No. 7 low ordinary Rio in New York \$6.45.

To-day's London official quotations are:—

		Sept.	Dec.	March	May	July.
Rio	...	33/-	32/6	—	—	—
SANTOS	...	33/9	33/9	34/9	35/-	35/3

We quote:—

Ceylon, mid. to good mid.	102/@106/	Costa Rica, mid. to fine...	84/@110/
Do. small to low mid.	80/,, 101/	Do. ord. to low middling.	62/,, 83/
East India, mid. to good		Jamaica, good to fine ord.	52/,, 68/
mid...	90/,, 103/	Do. greenish to fine	
Do. small to low mid.	72/,, 89/	colory...	75/,, 125/
Guatemala, mid. to fine...	82/,, 106/	African	30/,, 33/
Do. good ord. to low		Columbian, ordinary	48/,, 53/
mid...	61/,, 81/	Do. good ord. to	
Salvador, good ord. foxy		low mid...	54/,, 81/
greenish...	57/,, 58/	Do. mid. to fine...	82/,, 104/

Receipts in Brazil compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
Rio	1,203,000	883,000	678,000
SANTOS	2,080,000	1,472,000	992,000
	3,283,000	2,355,000	1,670,000

Prices realized at auction for the principal Marks of East India:—
MYSORE.

	0	1	2	PB	T
RK					
Mysore	98/-	91/-	73/-	100/-	59/6
Doopadakhan		90/6			
		COORG.			
	1	2	3	PB	T
Matheson's Coorg	103/6	95/-	79/-	108/-	70/-
Balamannay		94 6			
Wos Balamannay	107/-	100 6	83/-	117/-	73/6
Chenencottay	102/6	92/6	75/-	101/6	71/6
Palakerry	107/6	97/6	80/6	111/-	73/-
Matheson's					
AF	105/-	93/6	73/-	108/6	72/-
Coorg					
Matheson's Coorg	107/-	97/-	78/6	111/-	73/6
Chickenhully					
2	106/6	96/6	78/6	112/-	76/-

NEILGHERRY.

	F	A	B	C	PB	T
Hathigadoo	99/-	101 6	91/-	75 6	104/-	62/-
Mailoor	100/-	96 6	85/6	72/6	95/-	58/-
		bid	bid	bid	bid	
Palmer		100/-	91 6	73/-	103/-	63/6
Sultana	98/-	98/6	87/-	72/-	97/-	56/6
Goodannie	100/-	92/-	82/-	68/6	103/6	57/6
		bid	bid	bid	103/-	
Culloor Kutmbay	96/-	96/-	85/-	68/6	94/-	60/-
		bid	bid	bid	bid	
Chengal	106/-	108/-	96/-	77/6	116/-	69/6
Kotergherry	102/-	104/-	90/-	72/-	103/-	63/-
FC						
Tudor Valley	101/-	101/6	88/6	72/6	100/-	61/-
JM						
Woodlands		100/6	89/-	—	98/6	62/6
Nilgiris			88/6		bid	
Hallacarry		103/6	88/-	75/6	—	—
Nilgiris				bid		
Landed last week	401 tons.	Deliveries	672 tons.	Stock	12,059 tons.	
Do. last year	369 "	"	582 "	"	9,703 "	

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated September 17th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1st JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	290,862 packages.	427,417 packages.	13,960 packages.
1896-1897...	292,344 "	365,954 "	15,809 "
49,811 pkgs. INDIAN			
26,184 " CEYLON			
" JAVA			
Total	75,995 packages were offered in public auction this week.		

Home Consumption and exports since the beginning of the year show considerable expansion over either of the past two years given in the table; the increase in the re-exports of Indian and Ceylon Tea is decidedly encouraging, especially to the Continent of Europe.

Movements of Tea in United Kingdom from 1st Jan. to 31st Aug., as shown by Custom House Returns.

	IMPORTS.			HOME CONSUMPTION.			EXPORTS.		
	1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.	1895.
BRITISH E. INDIES	53,985,480	48,339,010	54,996,109	80,507,589	78,428,192	72,757,070	3,281,688	2,083,717	2,314,494
CEYLON	71,375,508	68,337,782	63,239,562	55,951,359	52,397,003	50,187,570	6,837,476	5,206,535	4,599,615
CHINA	16,599,724	20,621,577	25,713,857	11,867,812	12,905,865	11,798,757	13,858,591	12,098,174	11,825,714
OTHER COUNTRIES	4,696,524	5,748,947	5,340,759	2,545,830	3,315,664	3,857,548	681,027	726,304	637,908
TOTAL lbs.	146,657,236	143,047,316	149,290,287	150,872,590	147,046,724	145,600,945	24,658,782	20,144,730	19,377,731

Analysis of above export of Tea from U. K. during the last two years (not including transhipments).

	INDIAN.		CEYLON.		CHINA.		OTHER COUNTRIES.	
	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.
COUNTRIES IN EUROPE	1,490,719	853,639	3,692,683	2,826,899	8,066,031	6,818,043	522,717	502,055
UNITED STATES	444,587	236,484	1,337,406	950,229	2,059,838	565,400	43,059	65,419
BRITISH N. AMERICA	792,012	481,798	1,095,543	825,553	1,329,541	1,529,695	10,632	24,817
OTHER COUNTRIES	554,370	491,796	711,844	603,854	2,403,181	3,185,036	104,619	134,013
TOTAL lbs. ...	3,281,688	2,083,717	6,837,476	5,206,535	13,858,591	12,098,174	681,027	726,304

Indian. Auctions comprised 49,811 packages against 37,834 and met with a steady demand showing if anything a slight improvement upon the lower quotations of last week. Averages:—"Turzum," 1/5½d.; "Poobong," 1/5½d.; and "Monteviot," 1/5d.

Week's av. of Tea sold on Garden Account, 1897, 35,398 pkgs., av. 9d. 1896, 32,231 pkgs., av. 10½d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price. Pkgs. Price.	Pkgs. Price. Pkgs. Price.		
Assam	... 16,265 p 11	15,817 p 11½	83,860 p 11½	89,712 p 11½
Cachar and Sylhet.	8,295 p 6½	6,641 p 7½	44,359 p 6½	50,329 p 7½
Chittagong	... 306 p 6½	—	1,132 p 6	552 p 6½
Chota Nagpore	... 54 5	—	202 p 5	292 7½
Darjeeling	... 1,899 p 1/0½	2,950 p 1/1½	21,095 p 11½	19,603 p 11½
Dooars	... 5,437 p 7½	5,209 p 8	25,956 p 7½	24,023 p 7½
Kangra, &c.	... 669 8½	84½ c 8½	2,646 p 7½	231 p 7
Neilgherry	... 174 p 5½	144 p 7½	1,812 p 7	890 p 7½
Teral	... 1,601 p 6½	182 p 8½	4,927 p 7½	1,820 p 7½
Travancore	... 698 p 6½	1,204 p 7	1,747 p 6½	8,277 p 7½

Total sold on Garden Account 1st June to date 1897, 198,136 pkgs., av. 9½d. 1896, 197,306 pkgs., av. 9½d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	... 3½d	4½d	4½d	4d
FANNINGS. (Red to brown, strong rough liquor)	... 4d	5½d	5d	4½d
BROKEN TEA. (Brownish to blackish, strong liquor)	... 6d	7½d	6d	6½d

	1897.	1896.	1895.	1894.
PEK. SOUG. (Blackish greyish, useful liquor)	6½d	7½d	7d	7½d
PEKOE. (Greyish to blackish, some tip, useful liquor)	... 8½d	9½d	8d	9d
PEK. SOUG. (Blackish greyish, inferior liquor)	4½d	5½d	6d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor)	... 5½d	6d	6½d	6½d

Ceylon. There was a steady market for all descriptions; quality is gradually improving as generally occurs at this season of the year. Private telegraphic advice gives the exports to U. K. for the first half of the month as 3,000,000 lbs. and estimates the quantity for the whole month at 5,500,000 lbs. Average for week 7½d. against rather over 8½d. for same time last year. Averages:—"Carolina T Co. Goatfell," 1/3d.; "S T Co. St. Leonards," 1/1½d.; "Dalukola T Co. D," "Ingestre," and "Portmore T Co. P." 1/0½d.

Ceylon Tea sold on Garden Account 1st January to date 1897, 825,217 pkgs., av. 7½d. 1896, 731,738 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	... 6½d	6½d	7d	6½d
PEKOE (Ordinary leaf, little twist; fair liquor)	... 7½d	8½d	8½d	8½d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	... 5d	5½d	6½d	5½d
PEKOE (Somewhat bold leaf; indifferent liquor)	... 5½d	6½d	6½d	6½d

Java was not represented. 12,049 packages were offered in sale in Amsterdam on the 9th inst.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9d.) September 17th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	174 p	5½												
Glendale	61½c	7½	39½c	† 8½	13½c	7½	...	...	...	...	9½c	6½	...	...
Thia Shola	46½c	4½	...	...	45½c	4½	...	...	...	...	...	...	1½c	4
Tudor Hall	67	5½	...	...	...	...	...	...	67	† 5½	...	...	...	...
Travancore	698 p	6½												
Arnakal	134 p	8	16	8½	40	7	43	9½	16	6½	2	5	17½c	6½
Ashley	16	5½	...	...	16	5½	...	...	...	...	...	...	...	...
Atchencoil	32	7½	...	...	...	...	31	8	...	...	...	...	1	2½
Balamore	96½c	6½	...	...	58½c	5½	32½c	9	...	...	5½c	3½	1½c	3
Corrimony	80½c	5½	...	...	59½c	4½	15½c	7½	...	...	4½c	3½	2½c	2½
Goatfell	106	5½	...	...	50	† 4½	44	6½	10	4½	...	...	2	3
Invercauld	48	5½	12	6½	25	5½	...	...	9	5	...	...	2	3½
Isfield T Co	22	7½	...	...	...	...	22	7½	...	...	...	...	...	...
Perrindotty	115 p	6½	48½c	6½	26	6	20½c	7½	21	5½	...	...	...	...
Seafeld	49½c	6½	...	...	34½c	5½	14½c	9½	...	...	...	...	1½c	3

† Highest bid made.

ESTABLISHED 1814.

JOHN HADDON & CO.

GENERAL IMPORTERS

OF

COLONIAL & INDIAN PRODUCE.

A. B. C. Code, Fourth Edition. CABLEGRAMS—"DILUTUM, LONDON."

COFFEE.
COCOA.
TEA.
RUM.
RICE.
PEPPERS.
CINNAMON.
CLOVES.
FRUIT.
SALTPETRE.
COTTON.
JUTE.
SHELLAC.
GAMBIER.

INDIA RUBBER.
CAMPHOR.
WHEAT.
OILS.
LINSEED.
RAPE SEED.
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COCHINEAL.
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PIMENTO.
HIDES.
GUMS.

✧ TO PLANTERS AND GROWERS OF PRODUCE. ✧

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It is well known that there are Merchant Houses that, although they accept Produce for sale on **Planter's Account** they, on the other hand, are also **Purchasers on their own Account**.

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It is evident that the services of such houses are not wholly and unreservedly at the disposal of their correspondents. We on no account enter into competition as **Buyers against Planters**, but deal with each separate shipment on its own independent value; correspondents may, therefore, rest assured that **Produce** sent to us will be sold upon its merit, and not used to bolster up inferior qualities.

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We do not confine our business to any particular part of the world, but receive **Produce** from all over the globe, and are in touch with every market for **Produce**.

Samples and Reports :—

On receipt of samples, particulars of the class of **Produce**, and the quantity that can be shipped, a report shall be forwarded, giving full particulars as to market value, demand, &c.

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We can secure more money for the Planter and Grower of **Produce** than he can obtain by local sale, and, although in the latter case he may at once secure cash, we are quite ready to meet this, possible, advantage to the **Planter**, and by our system of negotiation of drafts drawn upon us against **Produce**, and willingness to pay freight on approved shipments at this end, the **Planter** will obtain a very substantial portion of cash, and further will be quite certain to receive the full **Market Value** of the **Produce** shipped to us.

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All enquiries will be answered by return mail, and upon arrival of shipment every expedition will be used to turn into money the **Produce** sent us.

Markets :—

We can find a market for any **Produce** from any country on the face of the earth. Put your business in our hands and be certain of getting full value and prompt action.

Bouverie House, Salisbury Square, London, England.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, OCTOBER 16, 1897.

[No. 29.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, “Planting Opinion,” Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 22nd October 1897.

SEASON REPORTS.

S. E. Wynaad. PUNDALUR, 13th October.—*Weather.*—From the 6th to 8th we had sunshine and at intervals cloudy; 9th and 10th we had the rains; in the evenings 11th and 13th very cloudy and at intervals a little sunshine, and heavy showers began at 2 p.m.; do not know how long it will last. *Crops.*—Below the average. *Plant-disease.*—No change, same as last reported. *Health.*—Good. *Grains.*—The same as last week. *Labour.*—Sufficient.

Coorg. POLLI BETTA, 12th October.—*Weather.*—The N.E. Monsoon set here apparently on Saturday during the night with a short sharp shower. On the three succeeding days there has been heavy rain in the afternoons, accompanied on Sunday and Monday by severe thunder and lightning. There was an absence of thunder to-day. This indicates that the atmosphere was surcharged with moisture. *Planting-diseases.*—The coffee is, like at this time last year, looking very fine. What is to be feared is that the severity of the leaf-disease may also, like last year, be deferred to late in the year. *Crops* are ripening up. *Interesting Item.*—The Rifle Meeting came off on 30th September and 1st and 2nd October, but the weather was not conducive to good shooting.

Nellampatty, British. 13th October.—*Weather.*—Rain for fortnight 6.92, to date 157.21; 27 cents fell last night, the first rain for a week, during which we have had a lot of bright sunshine and in the afternoons clouds and distant thunder. It has been splendid growing weather and one can almost see the plants growing. *Crops.*—Coffee is likely to be ripe early this year again. In fact on low elevation places (2,500 and below it) they have started ‘fly picking.’ The new rice crop has not made rice as cheap as it ought to have done, and it is still 8½ measures per rupee. *Plant-diseases.*—Leaf-disease in most cases has considerably abated and the trees are recovering wonderfully and looking well. It would seem we are to have the Ceylon fashion here

and get our leaf disease in June-August instead of September-November, unless indeed we are to get both. *Health*.—Good, for here *Labour*.—In most cases sufficient. Moplas have left in great numbers, and it is likely there may be difficulty in getting more, as they will in all probability flock to the making of the new Railway. *Interesting Items*.—Resident comes up: much-needed work is at once begun on bridle path up the Ghaut. Resident goes down: work stops at once!!

Nilgiris.

COONNOOR, 13th September.—Last week the persistent rain cleared off till quite the end, when after a day or two interval fine weather has again returned. It was badly needed everywhere. A grand season though for planting it has proved. Coffee is ripening up well, and fly-picking has been on for some time. Leaf rot, caused by the excess of moisture, has been unusually prevalent. Tea flushing very well again, and our particular enemy, flush worm, has turned it up almost. Jolly good time too. Extensions proceeding on several estates, but only in our mild Nilgiri way. We have three "swell" (as regards prices only!) gardens in this district, whose prices have been this year about the lowest on record. The third hasn't yet put in an appearance in the market. Our lethargic railway is apparently progressing as fast as ever, which isn't saying much! The chief energies of the establishment seem concentrated just now in supervising a few dozen coolies trying to establish a new principle in embankments, *i.e.*, to make a gradient of 1 in 1 serve the same purpose as 1 in 5, and in loose soil too. It may be that the "natural angle" will be found in time. *Health* fairish all round. *Labour* plentiful. Horseflesh of all kinds cheap on account of the exodus from Wellington.

SHOLUR, 8th October.—Rainfall for month 0.47, making 49.48 to date for year. Temperature 58° and 68°. *Labour* in full swing, but *grains* still dear. No sun to speak of, and tea won't flush owing to continued mist and cold mornings. The tea seed from "Peria Sholah" has come up well, over a lac of plants from 4½ mds. seed and very true to jat, resembling "Singlo" once or twice removed. Quality supplied excellent. The "Sirocco" Tea Roller improves every day, and is undoubtedly the finest in the market, taking very little power and doing its work well and is comparatively a cheap machine, as one boy is all the attendance necessary. The tea oxidises during rolling and is very soon ready for firing, and all foreign matter, such as bits of stick, bamboo, or hessian, can be picked out during the process of rolling, as the "mal" is open to inspection, not being covered at all, and there is a good table on which the attendant can stand.

GENERAL NOTES AND ARTICLES.

Spices.

There is quite a boom in spices. Pepper has doubled in prices, cinnamon has gone up a third, and others similarly.

Scientific research.

We understand that Mr. D. Hooper, formerly so well-known as a clever Chemical Analyst at Ootacamund, has established a research laboratory in the Indian Museum in connection with economic products. He will be allowed by the Trustees to undertake on a small scale private analyses of cinchona bark and other organic produce. It is a pity that the Madras Government could not see its way to retain his services in this Presidency, but though further off,

Madras planters will, we fancy, be only too glad to re-avail themselves of his invaluable services.

Hope for cocoa planters.

If advertising can create a demand, cocoa manufacturers—and indirectly cocoa planters—should reap a golden harvest. Cocoa firms at home are among the most persistent advertisers known to the advertising world. The proprietors of Vi-Cocoa have just achieved a record in securing whole pages of the *Daily Telegraph* at a cost of £200 an issue per page. Another firm announce that any purchaser of a certain paper in which their advertisement appears can go to the nearest grocer whose name is printed in that day's issue, when he will receive one penny (the cost of the paper) and a free packet of the firm's cocoa.

"Amelia Testatrix Esq."

We were favoured the other day with a communication addressed as above, with a request to forward it to the addressee. Making a bold guess we sent the cover to the writer of a recent article on Leaf Disease, signing himself *Hemeleia Vastatrix*, thinking the letter to be from a scientific enquirer eager on obtaining truth first-hand. It was returned for our perusal last week, and it turned out to be an application for the post of a tea-maker on "small estate on Nilgiri with salary Rs. 25 to Rs. 30"! It is difficult to guess at the modes of thought employed by the applicant, who, after perusing a letter on leaf disease, was "given to understand" that the writer thereof had a vacancy for a tea-maker "on Nilgiri."

Sisal hemp a failure.

Statements have been made to the effect that Mr. Chamberlain had abandoned his sisal plantation in the Bahamas as a losing speculation, according to the *H. and C. Mail*. The annual report of the Governor, Sir W. F. Haynes Smith, which has just been issued, tends to confirm the general impression that this West Indian industry is not a great success. The Governor observes:—"The cultivation of sisal plantations is abandoned in some places, whilst in others it is reported to be on the increase. The prospects for this new industry are now becoming more defined, and although it has absolutely failed to fulfil the anticipations once formed of it, there seems to be less reason to fear that it will die out altogether, and some reason to hope that it may in time become a small but well-established industry returning fair profits to those engaged in it." Pineapple cultivation in the islands is more promising. The Governor reports this industry to be increasing, and that large growers are making substantial profits.

Rubber prospects.

The question of rubber production is to the fore at the present time, says the *H. and C. Mail*. Even if a "slump" comes in the cycle "craze," it is very probable that quite as much rubber will be required for the tyres of motors, and other vehicles, as is now used for bicycles; to say nothing of the growing use for the article for varied industries. It is pointed out that there are big rubber forests in Tibet and mid-China which are as yet comparatively unexploited, and that while private individuals cannot, as a rule, accomplish much in their development beyond the "prospecting"

stage, there is yet ample room for work on the part of the State or public companies. Some attention is also being given to the Far Eastern sources of supply; for the rubber forests of Burma will be entirely exhausted within the next ten years, if the present methods of reckless and immature tapping of the trees are continued, and that year by year the output will decrease, until nothing be left. Of course, this is an old complaint with respect, also, to the West African and other forests; and the remedy would seem to be that the virgin rubber should be collected under the supervision of Europeans who have received the requisite training. It must be admitted, too, that, as time goes on, some of the plantation companies which have been formed in recent years should add considerably to the visible supply; but there appears still to be room for more (if properly managed) companies of the kind.

Light railways in India. Seeing that railways are so earnestly required in all our planting districts, we cannot understand the general indifference to the only form likely to be generally adopted, *i.e.*, light narrow-gauge lines. There is as much difference in the cost of broad-gauge and light railways as there is in the cost of a twelve-foot earth road, and the cost of a metalled ghaut highway. This is what the *Home and Colonial Mail* has to say on Light Railways in India, as a preventative of famine:—

Mr. E. R. Calthrop, C.E., of Liverpool, the eminent authority on narrow-gauge railways, anticipates an enormous expansion of railway enterprise in India in the form of an extension of light lines. These, he points out, if connected with the standard trunk lines, would establish trade with the millions of India who are as yet but small consumers of British products. In the event of famine the ordinary cattle transport of India breaks down at once from the impossibility of feeding the animals. That the narrow-gauge railways of India have been of great value in assisting in the swift carriage of grain to famine-stricken districts is undoubted, and it is admitted that they have also been the means of developing large tracts of the country. These light railways, constructed at half the cost, and carrying half the traffic per mile of the standard lines, are paying a larger percentage on capital than are the standard railways. It is asserted that for £15,000,000—the cost of the Manchester Ship Canal—8,000 miles of additional 2ft. 6in. gauge railways might have been built in India and provided with rolling stock.

The closing of the Mints. This is what Mr. Forbes Mitchell, the author of "Reminiscences of the Indian Mutiny," who has lived in India for the last forty years, and has peculiar facilities for knowing the real opinion of the natives, says on the subject:—
"I see that Lord George Hamilton said on August 6: 'It is the policy of the Government to multiply the industries of India, and thus render the people less dependent on the rainfall.' How is this to be done? Does Lord George propose to gather figs from thistles, or to twist ropes from sand? Be it remembered that the commerce of India and almost every industry in the country are already ruined by the policy of closed mints and a rupee artificially appreciated about 25 per cent. above its metallic value. The opium trade is killed, and those engaged in it are on the verge of bankruptcy. The wheat and the oil-seed trade has gone, and if the present policy goes on a little longer, the tea industry must follow the opium, wheat, and oilseeds. Keep the mints closed and force the rupee a little higher and you will have China tea competing with Indian tea, not only in Europe and the colonies, but in Calcutta itself. What are our large merchants who are responsible for the tea industry of India doing? Are they to sit with closed eyes and shut mouths till we have steamers loaded with China tea in the Hooghly to compete with an artificially-appreciated rupee, created solely for the benefit of the Simla Junta? With silver down to 20d. an ounce, with tea

garden shares at nil, then the tea industry will no longer be dependent on the rainfall. The competition of Argentina has already wiped out the wheat and the oilseed trades, and they no longer require any rainfall, because the millions of India can be more cheaply fed by wheat imported from Argentina than by the Indian-grown article."

Stones as a manure.

It is a fact well-known to all planters that land with numerous boulders and stones present often affords the best soil for either coffee or tea. Why should this be? There are a number of plausible answers that arise at once, but it is extremely difficult to choose the right one. How did this food soil get there? Is the humus so abundantly found in this soil a cause or a consequence? That is to say, is it the plant-food afforded by the detritus of the stones or rocks that induce vigorous growth of the plants that furnished, by their leaves, the humus? Or, on the other hand, is it the mechanical, pocket-like conditions that enable the whole of the humus to accumulate, no loss being suffered by the wash that prevails on stoneless soil. We put this query in no idle spirit. If it be the mineral plant food afforded by the decaying rock, as might be somewhat easily proved by chemical analysis, then we have at hand an easy and very cheap means of enriching our land. For it must be borne in mind that to powder even the solid rock is an easy matter with the help of suitable appliances. Stones are piled in heaps and covered with dry brushwood or any other convenient fuel. When fired sufficiently, they are put through a stone-breaker (the smaller sizes of which can easily be worked by hand power) or simply pounded up by hand. Perhaps the best way of applying the powder to the land would be by using it as a dilutant of such concentrated manures as poonacs or nitrates, especially the last. In most instances of course the percentage of available plant-food in the powder will be very small, and compare unfavourably with phosphates and other prepared manures. But the real question of course is the relative cost per unit, and in not a few cases it will be found that stone manure will compare favourably.

Quinine.

"Shilling quinine" has at last been reached again, says the *Chemist & Druggist* of 25th ultimo. The manufacturer's quotations this week are more or less nominal, but in second-hand about 70,000 oz. have changed hands at prices ranging from 10d. per oz. on Friday last up to 12d. per oz. on Wednesday. The last-named figure was paid by a broker for a parcel of about 8,000 oz., and since then it has been repeatedly refused. Messrs. Howard & Sons have issued the following statement:—

We beg to advise you that an advance in the price of quinine is inevitable, price will be definitely fixed after the Amsterdam bark sale of September 30. In the meantime we can offer a limited quantity at (2) two pence per oz. advance on our September list, making quinine sulph. in 1-oz. vials, 1s. 2d. per oz.

Next week's cinchona auctions at Amsterdam may be a turning-point in the commercial position of quinine. In all probability the German manufacturers, who have so far done their best to discourage a rapid advance in quinine, will be compelled to pay considerably higher prices for their bark, and in that case a fairly large advance will have to be made in the quinine prices. The general position of the article looks very sound, especially as the manufacturers, who now have a fair control of the drug, seem disposed to sell very cautiously, and not to renew the unrestricted dealings with speculators which a few years ago caused so great a depreciation in quinine.

Messrs. Powers and Weightman, of Philadelphia, also, on September 4, issued a circular on quinine, in which they say:—

Our sales of sulphate of quinine this year, up to date, have been

unusually large, but we have met every engagement promptly and executed all current orders, for ordinary quantities, from regular customers, in full. We have considered it prudent to suspend making contracts for a time, as our supply of the article has become very much reduced. When prepared to resume entering for future delivery, due notice will be given.

The agents for the B & S brand tell us that they were no longer selling at 9d. per oz. to wholesale druggists on Thursday last. They stopped offering at that figure several days previously.

To-day the market is, if anything, a trifle easier, with second-hand sellers at 1s. per oz. The B & S agents inform us that they are not selling at present. There is an impression that, should a moderate advance be established at the Amsterdam auctions next week, the German makers will fix their price at 1s. 2d. or 1s. 3d. per oz.

Black panther shooting. "SNIDER CARBINE" writes us:—"A fortnight ago a black panther fell to the rifle of Mr. Lawson Morgan, of the Goodalore Mullay Estate, in the Ouchterlony Valley. A dog of his having been taken by the brute, he went in search of it, and found the remains in dense jungle, where it would have been impossible to have sat over the kill. Hastily building a fence round the kill, Mr. Morgan laid a trap for the pard, which declined to visit the bait. For two nights the trap was set, but without avail. On the third morning Mr. Morgan with an attendant, after visiting the trap, ventured further into the jungle to look about for a suitable site for the tying out of a live bait. Having found a desirable spot where it was possible to get a chance of a shot, Mr. Morgan with his attendant was on the point of leaving, when the howlings of a troop of monkeys attracted their attention. Silently advancing in the direction of the commotion, which had become furious, the intrepid sportsman knelt down to await events. He had scarcely taken up this position, when he was rewarded by seeing the dark, lithe form of the pard advancing in his direction. Taking a rapid aim and covering the brute he fired, and when the smoke cleared, was in doubt whether he had not missed, as a slight inequality of the ground, the sombre colour of the animal, and the gloominess of the jungle all contributed and made it very difficult to distinguish the body as it was all in a heap. The aim, however, had been very true, the bullet just striking under the right eye, and shattering the head and jaws, death must have been almost instantaneous. The animal, though evidently full grown, only weighed 46 lbs. and was 5 feet and 7 inches in length. The cunning nature of the brute prevailed against its hunger, for she certainly had not had food for a week or ten days, yet would not look at the tempting bait. This, I may mention, is the third black panther shot within the year in the district, and the fifth accounted for within the last three years. The spotted variety seems to be quite as common, as seven have been accounted for within the same period. Mr. H. R. Norman made some pretty shooting with a Martini Henri carbine, dropping a black and a common panther within thirty seconds of each other with two consecutive shots; the second animal was stopped with a well placed shot in the centre of the neck, a descriptive account of which appeared in the *Nilgiri News* a little while ago. Though panthers are common enough now, rarely, paradoxical as it may appear, are they to be met with; it requires a thorough knowledge of the habits of the animal, and one has to be a past master in woodcraft, and possess a great modicum of those indispensable virtues—perseverance and patience—to be successful in the mysteries of woodcraft."

RHEA.

RAMIE CULTIVATION IN JAMAICA.

THE following extract will be found of particular interest and value, as it contains a great deal of information not previously available:—

The constantly increasing amount of attention which is being given to the cultivation of ramie is resulting in large additions to our present knowledge of the habits and *habitats* of the plant, and the conditions to which it can adapt itself to such an extent as to become a profitable product. A correspondent of the "Jamaica Agricultural Society," dealing with the suitability of Jamaica for the culture of ramie, points out that any advantage which India has over Jamaica, so long as the preparation of the fibre remains essentially a hand process, lies in the cheaper labour of the former, and this advantage will be swept away with the advent of a successful decorticating machine. The objection that the plant is not likely to prove commercially successful in Jamaica because of the enormous quantity which could be produced in India would soon swamp the market is dismissed with the observation that at the low price at which it can be produced, it will probably undersell cotton, jute and flax, makes it improbable that the world's supply will exceed the demand, at least in this generation. The correspondent evidently writes upon a subject with which he is well acquainted, if he appears to have experimented on the growth of ramie under varying conditions, both of land and season, and his conclusions seem to be at once thoroughly established in suitable soil the plant will "not only withstand a severe drought, but may also grow during dry weather, although less quickly than usual," therefore the idea that "without irrigation it would be a risky cultivation in Jamaica" is erroneous. In a nursery two years' old he succeeded, after a period of severe drought, in obtaining stalks averaging over three feet nine inches, and again, three weeks after cutting, he got ramie over four feet. At the same time he admits that cuttings planted out only a few months died from drought. In support of these views, the remarks of Mr. Allison, a well-known American authority, in reference to a Texan plantation, are quoted as follows:—"But early in July, 1889, a drought began, which lasted nine weeks. During this period, so great was the intensity of the heat, the soil was dried to a depth of more than two feet. Hundreds of thousands of coffee plants perished, but ramie survived the drought and quickened by the fall rains, grew to such luxuriance that often 150 stems were found in clusters not more than two feet in diameter." The plants referred to were of the *Nivea*, or white underleaf variety, but having after a long drought obtained growing roots from a neighbour who had planted *Tenacissima* variety, the writer concludes this species is also suitable to countries where constant irrigation is not in vogue.

The chief obstacle, therefore, to the profitable growth of ramie in Jamaica, appears to be the lack of a successful decorticating machine. Our Jamaica planter readers, therefore, will learn with pleasure that according to *Capital*, the difficulty connected with this process is one easily overcome.

Says our contemporary:—"The gum, which has always been held up as a bugbear, has assumed such a size in some people's imagination, that it is difficult to conceive how any remedy could be found to cope with it. As a matter of fact the stripping of the bark, or decortication, is one of the simplest and easiest things possible, and instead of the woody fibre being carried away, to be plunged into a hot soda water bath to allow of decortication, all that is required to be done is to snap off the stem as close to the ground as is required the result being that the woody fibre breaks through the bark; then by simply pulling it, it decorticates itself, and instead of robbing the ground, the woody fibre substance can be left to rot and form manure. The ribbons are cut off with a knife, for the fibre is so strong that if an attempt was made to break it, it would uproot the plant bodily. . . . Rhea or ramie will grow almost anywhere but growing and flourishing are two different terms, and it will only do the latter in the very richest of soils that are not likely to be inundated, for it is very chary of damp. . . . To cure the ribbons, almost no machinery is required, and, in fact, this can always be done in the sun; the only absolute necessity is a baling press for hitherto the rough bundles sent down from Assam have run away with all the profit in the high rates demanded for freight, so that baling by hydraulic or other power would be necessary. There need be no apprehension on the part of jute growers that their trade will be interfered with, for we feel certain that the rhea fibre will

always command a much higher place in manufacture than the finest of jute. There can be no doubt that fabrics can be manufactured from this fibre, which only an expert can distinguish from silk, and, so long as ramie can be mixed with silk, there is a great future for it. To many it may not be known that a great deal of what is called Assam silk is made from the fibre, and it is only after repeated washings that this can be detected. To those then who have a large area of first class waste land we would recommend the cultivation. The dried ribbons when sent home in the rough command a ready market, and have done for some years, at prices ranging from £14 to £16 per ton which, if one were possessed of a baling press, would leave a handsome profit behind it."—*The Produce World*.

LETTERS TO THE EDITOR.

TO PREVENT IRON ROOFS FROM SWEATING.

SIR,—It may interest some of your readers to learn that my experiment with the ceiling-cloth to prevent the discomforts resulting from the profuse sweating of my iron roof has proved entirely successful. The reason of this success, I take it, is that the upward passage of the moisture in the room, which would otherwise condense on the cold iron at night, is stopped by the practically air-proof cloth.

KUTCHA.

ARBUTHNOT & CO.'S TEA CIRCULAR.

SIR,—With reference to the following extract from your paper of 21st August last:—

"Messrs. Arbuthnot & Co.'s monthly circular, which unluckily generally reach 10 days later than other home circulars, dated London, 16th July 1897, says:—(and here follows an extract about tea from our circular)" our London House write as follows:—

"We note the remarks in *Planting Opinion*, but as we always have to wait for correct returns of figures from the Docks which we cannot get till the 8th of the month, it is impossible to issue our circular earlier if the useful statistics we give are to be included."

MADRAS, 7th October, 1897.

ARBUTHNOT & Co.

SEALING WAX: A QUERY.

SIR,—The black dammer tree, *canarium strictum*, is to be found in these (Travancore) jungles. The resin which issues therefrom is of a deep brownish yellow or amber colour when held between the eye and light, and when adhering to the tree it has a bright shining black appearance. I have been told this resin could be used for hermetically sealing up preserve bottles, jars, etc., i.e., over the cork of course. Could you or any of your readers kindly tell me what is to be added to the boiling in order to make thoroughly reliable sealing wax for the above purpose? I have tried with linseed and cocoanut oils, but it either does not adhere sufficiently to the stopper or paper, or with the latter oil it will not dry up but remain in a sticky condition.

Apologising for the space I've taken,

AGRICOLA.

SHORT CROPS.

SIR,—Have any of your readers thought that they could trace any connection with this and the time they manured? As a *chick doree* I held very strong opinions on this point. Further experience confirms me in the view that manuring just about and before the flowering season converts the whole coming crop of berry into leaf, the cause being a thorough check to the plant, which needs the "winter" not only of Nature but that of human agency. And yet how often has one met the planter who "gasses" about the magnificent effect that a digging just about that time has later on on his coffee. Of course it has. Lots of leaf—but precious little berry. And the visiting agent gives him a pat on the back and advises his neighbour to do likewise!

Those planters who keep a careful record of when and how

each field was cultivated and the crops can very easily verify this.

Mind, I do not pretend that this is the sole reason. It explains in a measure the magnificent show of wood which comes out only to be thrown away. The pity of it!

C. DE V. D.

CONSERVATION OF SOIL MOISTURE.

SIR,—After 20 years experience of the difficulties planters have to contend with in introducing any special methods of cultivation, I could not commit myself to fixing any time for "soil stirring." I can only say to those who try it "complete it as soon as possible before the hot weather regularly sets in."

I fancy, in the majority of cases, crops are now all off the estate by mid February, and that stripping rarely extends into that month. No doubt there are special cases where crops are heavy and labour short when crop operations extend to a much later period, and I have myself been stripping up to the first week in March. But I am not dealing with special cases, though I should like to see planters struggling to harvest their crops on account of their being bumpers!

If picking is properly looked after, at the completion of stripping there should be so little coffee on the ground as to render its recovery worth neither the trouble nor expense. On each occasion of picking over the trees, if fallen coffee is also picked up, it will be difficult at the end of crop to find on the ground what has previously escaped observation. This, at any rate, is my experience.

In advocating "Soil Stirring"—as indeed many other works—we have to take for granted that labour is sufficient. This is often a serious matter, though personally I have more often been troubled the other way. I wrote hurriedly in my last merely wishing to support what I considered of importance, and purposely avoided side-issues. If, however, difficulties arise from lateness of crop or insufficiency of labour, and only portions of the estate can be "stirred," it would be advisable to treat heavy soils first, those which bake and crack, and do as much as can be done for the lighter soils later. After all, all soils cannot be treated alike if we wish to get the utmost out of them, and every planter should know something of the characteristics of the various soils on his estate.

Your correspondent "W. I." misunderstands me, as he evidently misunderstands the late Mr. Pringle. "Deep digging" should certainly be done, but not in the hot months. His time of deep digging is correct, i.e., September or October, when the soil should be well turned over. If this is done, cleaning up for crop is easily managed by a light forking and hand weeding. But I do not want to raise controversies on matters of weeding! It is *after* crop and before coolies are paid off that "stirring" should be done, and this is quite another operation.

The Wynaad and the Planting Industry of Southern India, by FRANCIS FORD, Re.1.

The Planting Directory of South India, Re.1-8.

Tea Planting from Seed to Cup in Tamil, with English translation. Re.1.

Sketch History of the Planting History of Wynaad, by the late ADOLPHUS ARTHUR WRIGHT. Rs.1-8.

Science and Coffee, by the late MR. WM. PRINGLE, M.S.C.I. Rs.1-8.

Report of Observations of Injurious Insects and common Crop Pests during the year 1883, with methods of Prevention and Remedy, by Miss ELEANOR A. ORMEROD, F.R.Met. Soc., &c., Re.1-8. Apply to

"PLANTING OPINION" OFFICE,
3, ESPLANADE ROW, MADRAS.

Conclusions drawn from experiments in stirring show, according to Fream, "that (1) keeping the soil stirred if only to the depth of half inch increases the water content of the first 12 inches to a very appreciable degree; (2) that the deeper the tillage, at least up to 4 inches (*italics mine*), the greater is the increase in water content; (3) that the rate of increase diminishes as the depth increases" (*italics mine*), etc.

G. Drysdale Dempsey, C.E., on Drainage says, "Too much cannot be said in favour of pulverising the soil; even thorough draining itself will not supersede the necessity of performing this most necessary operation," and further "supposing the soil not properly drained, the sufficient pulverising of an additional inch in depth would increase the escape of water from the surface by upwards of 100 gallons a day," *i.e.*, per acre. These considerations must have been taken into account by Dr. Voelcker when he commended the system of shallow ploughing adopted by the Indian cultivator.

Since stirring is a very light work, all classes of coolies can be employed at it, and with a gang representing a cooly an acre, it would not take long to run over an estate. A compacted soil, especially a heavy one, bakes and cracks; and this, besides conducing to loss of moisture by evaporation, causes injury to the fibrous roots of the trees growing in it.

I trust I have made matters clearer to "W. I." in what I have written. Deep September-October digging is more for aeration, and is in fact a manurial operation. The hot weather stirring is merely recommended to check evaporation at a time when soil moisture is so much needed to keep fresh the "Spike" then upon the trees.

HUMUS.

FIRE AND LEAF DISEASE.

SIR,—The P. O. of the 26th June, with your introductory remarks on this subject, has just reached me. May I be permitted to join in?

I may premise that coffee planting in this colony is now practically moribund. It has been brought to this stage by leaf disease. In my endeavour to resuscitate the industry, I am invariably confronted with the past experience of this Colony with this disease. Although as you know, Sir, I have had some planting experience in India, I must confess that my knowledge of *Hemeleia Vastatrix* was of the usual order. With the incentive to combat the prejudice existing against coffee, I was led naturally to make as complete a study of the question as I was able to. A study, I regret to say, greatly confined to a long list of failures to cope with *Hemeleia Vastatrix*, with successes only here and there. Unfortunately there have been but few occasions when I could test in the field the opinions arrived at in my study. I have below briefly summarized a report of Dr. Burck, sometime Assistant Director of the Botanic Gardens, Buitenzorg, Java, to whose researches the present writer is much indebted.

The necessary conditions for the germination of the *H. V.* spores are water, air and all but complete darkness. The most cursory glance will show that the *under* sides only of leaves form the points of attack; the *upper* side has no stomata by which alone the spores can penetrate to the interior of the leaf. *No other spot, under ordinary out-of-door conditions, but the under-side of a coffee leaf permits of the germination of the spores.* These spores are carried here and there by the wind, and in a lesser degree, by mechanical means. But those spores which fall on the upper sides of leaves or on branches or stems of coffee, on the ground or on any other place and allowed to rest there, die absolutely. Here is explained the futility of stem washes. And as the defeat of an enemy is most surely gained by finding the point of his true attack, so here by having found where to look for the first approach of the disease, we have gained a most important point.

To proceed. The spores must have water; dampness or moisture is not sufficient; absolute fluid must be present. Air and darkness, the two other conditions necessary for germination, are easily found, but it may puzzle some to find the fluid on the underside of the leaves. But let one of your readers to-morrow morning examine the first coffee branch he comes across. He will notice that although the old leaves are dry, the young leaves at the end, just out of or still in bud and sticky with bud resin, will have retained, owing to the presence of this resin some dew or rain drops well on into the morning. If this branch is an affected one, so much the better. Your readers will observe that none of the old leaves, counting the first half dozen pairs as young ones, show the disease in its incipient or earliest primary stage. The young ones only have these spots. The first or bud leaves show no signs. The second pair none also, although the disease may be there. But on the third pair the yellow spots of the primary stage are present, and as he goes up the branch towards the stem the traces grow larger and larger, with indications of the secondary stage having arrived.

It is this secondary stage which is the actual cause of the fall of the leaf, the disease taking about two months to run its course.

If he can eradicate from any leaf the disease while in its first stage, that leaf will be saved. It is evident, therefore, that if he can successfully defend this one and only breach of the enemy it can make no inroads.

This is perhaps all old ground to some experienced planters, but it is a necessary explanation of the plan I am going to adopt in commencing coffee cultivation here, and which I submit for the advice and criticism of your readers.

Recognising that it is practically only the outside of the plant that has to be protected, I have arrived at the conclusion that nothing can be better than some re-agent in liquid form, which will kill the spores and at the same time adhere more than a few days to the leaves without any way injuring them. Here is a list given by Dr. Burck, referred to *supra*, with his remarks on two of them:—Copper Sulphate, Chloride of Iron, Nicotine, Boric Acid, Sulphate of Quinine, Extract of Cinchona Bark, Cupric Hydroxide, Mixture of Lime and Sulphur, and Cupric Sulpho Steatite.

Of all these, Nicotine and Copper Sulphate proved the best for practical use. The proportions are, for the latter 1 to 1,000 parts of water, and as this re-agent will kill the spores when mixed in the proportion of 1 to 150,000 parts of water, your readers will understand that a good margin has been allowed for the dilution of the mixture by rain or dew. If this is used constantly, a crystal which burns the leaf is deposited thereon. A little sugar, however, added to the mixture prevents crystallization to any large extent. The Copper Sulphate is easily obtained, is cheap, and is in powder form readily dissolved in water. Tobacco water, however, is recommended. It is applied as with all the other re-agents given by a spray diffuser to the *under* surface of the leaves. It is immediately effective, killing all the spores then on the leaf. By condensation a thin film of mixture remains on the leaf, only to be dissolved by the next rains or dews. This process goes on until it is gradually washed away. Renewed applications are, therefore, necessary at intervals contingent on the rainfall or amount of dew. The proportions recommended are *one lempeng*, *i.e.*, to two kerosine tins-full, sufficient for 1,000 small plants. Put the tobacco into warm water the night before use. As tobacco is easily obtainable here, it is the re-agent I intend to use.

I shall begin applying this spray in the nurseries once or twice a week. But of course circumstances must guide one, and fewer applications may be found sufficient.

In planting the estate (6 ft. x 6 ft.) every fiftieth row each way will be trebled, thus dividing the whole estate into squares with strong hedges of coffee forming the four sides. These

hedges will be kept trimmed on both sides and allowed to run up to 6 or 7 feet, and, across the prevailing winds, even to 9 or 10 feet. Only these hedges will need the constant attention of the spraying gang, who will be kept at this work every day of the year. The gang will, however, at once be transferred to wherever indications of *Hemeleia* appear.

In addition to this I shall use the eradicating method as practised by Mr. F. W. Morren, President of the Blithan Company of Coffee Planters, and Mr. J. A. A. Tannay, Administrator of Kawi-Sari, both of Java, and which they used with success on 220,000 plants or about 200 acres, and 170,000 trees or about 140 acres, respectively.

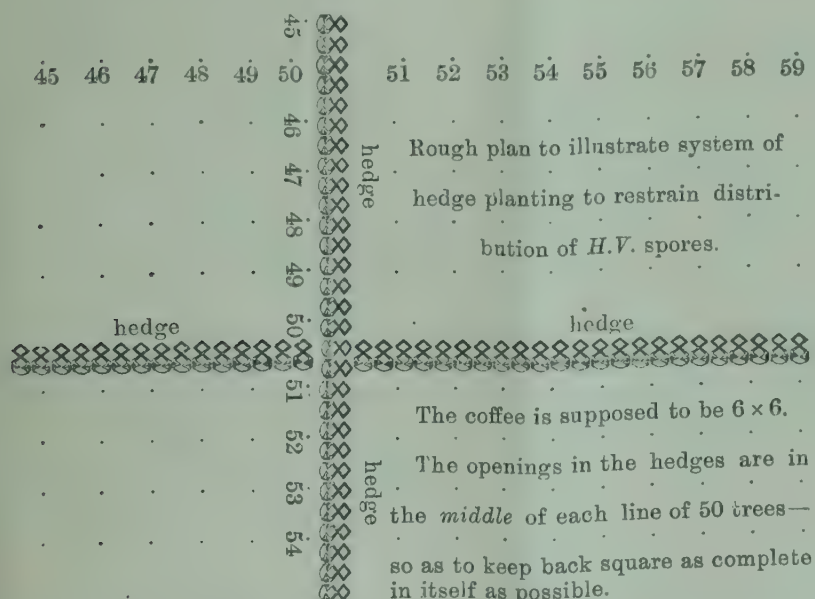
Here is a description of the two methods put in practise. The cooly is supplied with a small bottle, only one-third or one quarter full of concentrated Sulphuric Acid, through the cork of which a glass tube passes half way down the bottle. A thin needle of bamboo is passed through the tube into the acid, and then applied to the leaf, the diseased spot being punctuated. This is a very primitive style. An ordinary oil squirt with a little ingenuity might be converted into a far more effective implement.

Scissors, no description is given, have been found to permit of quicker work than with the acid. A little tube in the scissors receives the cut-out bits, so that I presume the "scissors" are more in the nature of a punching tool, such as is used by shoemakers. I might here mention that throwing the spore into water, one way mentioned of disposing of the cut-out bits, effectually kills them, although this sounds rather a paradox read in conjunction with my earlier remarks.

The latter method of eradication is what I would use. I should in conclusion point out again that it is the third pair of leaves which first shows the attack. That this pair is the only one which should be treated with "scissors" or acid. But as the tree continues growing, the third pair is constantly changing into the fourth pair. An average growth will effect the change in about a month. It is child's work, and in that way costs little. Trusting that what I have written may prove of some value, I am, etc.,

DURBAN, NATAL, }
23rd August, 1897. }

C. DEV. D.



COFFEE.

Coffee in Queensland.

Despite many unfavourable conditions, such as dearness and comparative scarcity of labour, coffee planting in Queensland has "come to stay." From all the sources open to us, private and public, the life of a Queensland coffee planter is many degrees more attractive than that of his fellow planter in India. For in many districts where coffee flourishes in the Colony, it has been proved beyond all doubt that besides the abundance of crop, the planter can settle a *pucca* home, unobtainable alas! in the coffee climes of Ind.

Maragogipe.

We are pleased to find that interest is gaining ground daily in the necessity for fresh strains of seed, a necessity on which we have many times and oft insisted. Maragogipe may not fulfil the extravagant pretensions some of its advocates have set forward, yet on the Nilgiris it is gaining increased favour yearly. It is in the nature of things that experiments conducted on out-of-the way gardens must necessarily take many years before, if successful, they are generally adopted in the district. By means of an experimental garden carefully conducted on economically sound principles, the progress of a district could be accelerated several hundred times faster than is now possible.

Mr. T. L. Villiers, the Ceylon planter who recently proceeded to Brazil as the Manager of the Dumont Coffee Company's estates there, has returned to Ceylon. His description of planting life in Brazil is not attractive:—

"Mr. Villiers went with Mrs. Villiers to the estate, but found the life there rougher than he anticipated and very different to a planter's life in Ceylon. The heat, he says, was very trying, almost as bad as Colombo, and yellow fever was very prevalent in the neighbourhood, so that he managed to get his agreement with the Company cancelled, and left Brazil after a very brief stay. His description of planting life in Brazil is interesting. There are very few English in the country, and they are not popular with the indigenous population. There was a European family on the Dumont Company's property—the Secretary and his wife—but the nearest European doctor was a 16 hours' railway journey away, and the labourer is Italian, with little in common either with the cooly or with the planter. The little narrow-gauge railway that traverses the San Paulo district is the principal means of communication, but there is an accident on it nearly every day, so that, while it is useful for freight, passengers prefer to go round to Rio by sea, as being slower but safer. Brazil coffee growing may be profitable, but is evidently not an occupation for a married Ceylon planter, or for anybody who is not prepared to rough it a good deal."

The Market.

There has been a good deal of fluctuation in the quotation on the terminal market says the *P. M. Review* of 18th ult., due, as is generally the case at the time of year, to the receipt of cables respecting the prospects of the next Brazil crop. The two principal ones received have been entirely of an opposite character, the first stating: "Crop prospects favourable," and the second that it was affected by drought and that the flowers had not set. The heavy receipt and the evident desire on the part of Brazilians to sell has quite counteracted the latter telegram, and the highest prices have not been maintained. At auction there has been a moderately large supply, and prices for all grades, excepting the lowest, have been well maintained, although in some instances there has been a little irregularity. Plantation

CENTRAL HOTEL,
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TERMS MODERATE.

Ceylon has again sold at a slight advance, and very full prices were paid for East India, particularly the bold sizes. Mocha continues relatively very cheap, but does not attract much attention.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended Sept. 11, 1897.	Tons. 250	Tons. 229	Tons. 422	Tons. 323	Tons. 12,959	Tons. 9,703
For the 34 weeks ended Sept. 11, 1897.	9,946	10,177	15,470	15,584	—	—

Blossom fertilisation. Recent enquiries as to the value of bees on coffee plantations naturally recalls the animated discussion on the subject some months ago. The strange conclusion of the argument was that no one knew for certain whether the major part of the fertilisation of the blossom took place more during the day-time than at night. Theory, and of an interesting quality, was given in ample measure. But the record of actual experiment was entirely lacking. Yet it would be by no means difficult to conduct a series of conclusive experiments. Opening simultaneously, the time required for such trial need be but a few weeks at most. The questions for solution are three: (1) Whether the major work of fertilisation is conducted at night or in the day-time; (2) Whether, if in the day, bees can appreciably supplement the work of other insects; (3) Whether wind alone would be sufficient. To determine these, a tree should be chosen, conveniently near the bungalow if possible. Its spike-laden branches should be carefully examined, and a selection should be made of a number of equal development. Either the whole branch or a portion thereof should be enveloped carefully in a bag of very fine muslin, fastened with a lightly fitting rubber band, so as to prevent the intrusion of insects, and while permitting of its easy removal. Two branches, say, should be selected for day experiment and two for the night. In choosing these it would be well to have one day branch and one night branch on the same primary on one side of the tree, and the other two on another primary on the other side of the tree. Before tying them up, they should be carefully ticketed with the number of buds ready for blossom, the immature spike being rubbed off. The day branches should be kept open, *i.e.*, have the bag removed altogether, during the day, but should be carefully closed early in the evening, certainly before dusk. The night branches should be treated of course in exactly the opposite manner and be closed at dawn. A second and double set of day branches could be chosen for settling the bee question, which would be rather more difficult and would entail having a convenient time at hand. One set should be kept open all day, but the other should be always closed, except for the purpose of introducing bees into the bag. It might be sufficient to introduce a couple of bees and leave them. The third series is rather more difficult, *i.e.*, to determine whether wind alone would be sufficient. For this purpose the bags would have to be kept entirely closed throughout the whole period, and

gently shaken at intervals during the day. To balance these branches another and similar number of branches should be selected; these should not be protected in any way whatever. When the blossom has once set, careful counting would give the results in each case, results which could not fail to be of great value. For if the wind alone is sufficient, it is obviously useless to trouble ourselves about anything except ensuring that the prevalent breezes shall not be rendered entirely nugatory by excessive shade or shelter belts. If, however, insects of some sort are indispensable, it is a matter of great moment to know if the attentions of moths and other night insects suffice. Should they not so suffice, the final question is, are bees of practical use or not? If this be answered in the affirmative, the only sensible conclusion is to encourage their presence on the estate in all possible ways. That this can be more or less easily done we have before now amply demonstrated in these columns.

The above experiments, which may seem to the casual reader complicated and tedious to a degree, are in reality very simple. Briefly all that is required is to fasten on and remove a few muslin bags twice a day, and to compare the number of buds with that of the "set" blossoms of each branch.

COFFEE FORCING.

(BY A LOOKER-ON.)

THE fact, announced above, that these remarks are by a mere looker-on may be sufficient to ensure their non-perusal. To guard against any mistake, I would beg of my practical readers to bear in mind that the ideas set forth below are rank theory, if not absolutely heretical. So that if they read further, they will have only themselves to blame if their conservative feelings are jarred by the crude newness of my views. This introduction should serve my purpose.

I shall start by challenging the whole system of present-day coffee cultivation. What is the reason and object of either starting or buying a plantation? To gain a return on the capital. As large a return, some add warningly, as is compatible with safety. Amplified, this means that a property yielding a moderate but regular income is preferable to one giving very large returns for a few years and then collapsing. In general, the principle is sound as a bell. But applied to coffee-planting, there are serious faults to be detected in its application. In all except one favoured district, coffee districts in South India do not boast of such climate and local surroundings that would make one look forward to making one's permanent home therein. Again, it is seldom that the small and regular income derived from a "safe plantation" enables the possessor of the property to live on it with comfort in the old country. The obvious conclusion is, therefore, that the sooner one can capitalise, I do not mean by selling, the whole income the better. How is this to be done is the question I have set myself to answer. That it will be scouted as absolutely impracticable by my readers nowise affects my self-satisfaction as a theorist.

In my peregrinations round the coffee districts I have noted that in many cases of bumper crops, the chief cause has been alleged—by neighbours only, of course—to the system of forcing the crop from suckers. The owner c

manager naturally attributed it to his unusually excellent cultivation. The after-exhaustion of the plant is gloated over by the first as inevitable, and glossed over by the second as accidental, bad season, &c. &c. Now here we have the fact that by means of allowing the growth of one or two suckers from the stem, considerably above the average may be obtained. The succeeding crops, it is true, are very small. But cannot this be averted? Experience says no. Theory, from the pen of the writer, agrees, with a reservation. What is this reservation? High cultivation, be it ever so Eifellian, cannot do it. No, as things stand, this is true. But *why* should things stand as they are? For I hold that by altering the general conditions, results otherwise unattainable could be easily gained.

The usual system followed in suckering is to allow the growth on every tree in the plantation or field to be treated. My suggestion is to treat thus only one-half or one-third, *i.e.*, allowing suckers to grow on every second or third tree only. Alternate rows would be the easiest way of doing this. It would depend of course on the climate of each plantation whether the sucker rows should be closer or further apart. The sooner the maximum crop was attained, the closer the rows and *vice versa*.

If the time required was, say, two years, my theory is this. Let one row sucker the first year, but keep alternate rows in the usual order. The second year, when the suckers are bearing heavily, allow suckers to start on the first row. Thus one half of the field would be bearing profusely while the other half was recovering. Each year the suckers would, I imagine, have to start lower and lower down the stem. In fact, it would be a modification of "native coffee." It might, indeed, be advisable to start boldly with root or collar suckers from the start. Undoubtedly the trees would perhaps become exhausted sooner than if treated in the ordinary manner, but in compensation the crop would be a great deal larger. At a rough computation you would have secured in, say, ten years the same total crop which could otherwise be yielded in fifteen, and save the loss of interest in addition. The reason why I suggest that alternate rows should be treated, instead of in whole blocks or fields, is that the cropping rows would have practically all the light to themselves and would moreover shelter the young growth coming on. Replacing exhausted stock would seem to be at first sight a very big and difficult business, but I cannot see why this should be. Native-grown coffee is not exhausted sooner than topped coffee, is it? The annual root suckers are an indication how the methods of nature may be improved upon. For as it is imperative that each sucker should be forced to bear the biggest crop possible as soon as possible, topping the suckers is indispensable. Moreover, few plantations are so sheltered that they could allow the trees to grow up to their full height with any chance of big crops.

TEA.

Java plantations.

A recent visitor to the tea-plantations of Java, Mr. John W. B. Davidson, of the well-known Sirocco Company, was greatly struck with the splendid growth of the tea. The soil he stated to

be very excellent. The factories are large and well-equipped, but their process of manufacture is different from the modern Indian and Ceylon modes. Withering is not attended to, the leaf being sun-dried, which accounts in great measure for the very poor averages of most of the estates. There are only two Englishmen in the tea-districts, and they are keen on inducing more of their countrymen to join them, the prospects of success being so very good.

A correspondent writes:—"Your article on wind-breaks was interesting. But I think a plan almost as good and certainly cheaper would be to use rows of tea-bushes themselves as wind-breaks. A single row would be more than sufficient, as their habit of growth is very dense. On the other hand, their small height, scarcely thirty feet at best, would necessitate the belts being more numerous than if such trees as grevillias were used. Again, the food taken from the soil would be tea-food, and there would be no return to the soil to speak of, until their full height had been attained. Though, if the jât were good enough to enable one to dispose of the seed, a considerable profit could be gained, counterbalancing all other disadvantages. It is by no means uncertain that tea-seed oil could be manufactured at a profit, if the quantity were at all appreciable, as it would be if a whole estate was lined with tea-hedges as wind-breaks."

MOLINE,

A PERFECT TOILET SOAP,
MOST DELICATELY PERFUMED.

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THE BEST SOAP FOR ALL
HOUSEHOLD PURPOSES.

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A steam dryer.

A novel and cheap type of tea dryer has been brought to our notice in Sutton's Patent "Safety" Steam Dryer. Among the special advantages claimed for the machine is that each tray is subjected to exactly the same temperature by means of steam coils placed between each tray. A constant temperature of 225° to 275° can be maintained with ease as long as the boiler pressure is kept up from 45 to 70 lbs. It is of course impossible to burn or smoke the tea in any way, an extremely important point in finishing off or re-firing the fine grades. The space occupied is only 7 feet by 6 feet and 6 feet high to the base of the chimney. The vapour from the drying tea is allowed to pass off in three sides, thus avoiding stewing. The steam required is very small, a 4 H.P. or 6 H.P. boiler being sufficient for six of these dryers, each of which will turn out 40 lbs. of made tea per hour. The price, with ten trays, is only £55, and can be procured from G. W. Sutton, Great Baddow, Chelmsford, or from Hieron Rolfe and Company, 28, Martin's Lane, Cannon Street, E. C.

"Fruit-roots and wood-roots."

One of the toughest horticultural fallacies is the one indicated by our heading. Its vitality is explained in a large measure by a certain amount of truth it undoubtedly contains. Some go so far as to assert that the surface-feeding roots, which they call fruit-roots, are absolutely useless to tea and should be destroyed whenever possible. Further, that the only roots that help to produce flush are the deep tap-roots, or wood-roots as they call them. The simplest refutation of this extraordinary argument is to invite such as hold with it to plant their tea in future on bare subsoil. For the tap-roots are alone found in the subsoil, the rich surface soil being monopolised by the feeding roots, *alias* "fruit-roots." Or, if further instances are required, let them turn to Ceylon, which yields abundantly on soil never disturbed by fork or mamoty. Again, how is it that shallow manure pits have the slightest effect on the flushes? If it is the deep-feeding sub-soil roots that produce the flushes, why do not these worthies drill holes with crowbars right below the surface soil out of the reach of those greedy fruit-roots. The real respective uses of surface and subsoil roots are that the former are principally feeders and the latter principally drinkers. The latter have to go a great depth mainly in search of water, while the latter exist on the surface simply because it is there that they find their most abundant supply of food, both organic and mineral. The growth of roots can only take place by absorbing the food present. Consequently, wherever food is found in greatest abundance there will be noticed the most luxuriant development of the roots.

The Market.

INDIAN TEAS.—Prices for the medium and lower grades have fallen, says the *P. M. Review* of 18th ult., to a level which has induced the trade to purchase more freely, and a distinctly larger business has been transacted than for some time past. The buying, however, is of a somewhat cautious character, the opinion generally being that with heavy supplies of the common sorts, values have not reached the lowest point, although as they compare favourably with Ceylons a

continued improvement in trade may be looked for. The Sylhets and Dooars gardens are supplying the market with a more useful assortment, and, as prices are moderate, they have been taken more freely at the decline. Some of the Pekoes, although thin in cup, are of attractive appearance, and are readily taken both for the home and export trade. Assams, on the whole, do not show any further depreciation in quality, and being now obtainable at useful prices, they have met with a fairly active demand, and it is probable there will not be any material change in values for the present. A good selection of Darjeelings has been offered, the quality being quite up to the improvement shown in previous sales, and transactions have been on a fairly liberal scale, the finer descriptions still meeting with a good inquiry at late rates, while the lower sorts have sold irregularly without material change. Those from the Cachar districts continue to improve, and have met with greater attention, but Travancores generally being poor and undesirable are comparatively neglected. The latest reports of the out-turn of the crop are somewhat conflicting; some of the gardens are said to be deficient in weight, while others are quite up to, and in some cases, in excess of last year. However, as the recent accounts of the weather are favourable for flushing, it is quite probable that any deficiency will soon be made up, but it certainly appears likely that the earlier estimate will not be reached. Of the 49,911 packages catalogued for public sale 44,219 were sold, the demand being active for all the finer descriptions at late rates, and steady for other grades at the decline.

CEYLON TEAS.—Increased firmness has prevailed in this market, and a good business has been transacted at generally hardening rates, with the exception of the lowest sorts, which show no change. The most active demand has been for the medium and better grades, between 9d. and 1s. per lb., in both Whole and Broken Leaf descriptions, which have further risen in value. Some of the marks, which a short time since were selling at about 8½d and 9d, are now fetching over 2d per lb. more money, and although the quality now offered is certainly better, it is not sufficiently so to warrant the extra prices paid. At the public auctions 26,180 packages were brought forward, of which about 2,000 were withdrawn. The quantity advertised for sale next week shows a considerable reduction, and therefore it is not unlikely that the rise in values will be maintained, if, indeed, there be not a further increase in prices.

WE SELL**PURE DRUGS.**

Pharmaceutical Preparations, Soaps, Perfumery and Toilet Requisites, Patent and Proprietary Articles, Surgical and Scientific Instruments.

N.B.—All Drug orders to the value of Rs.100 and above are allowed free bottles, packing and transit up to the Railway Station at Madras.

COLLINGWOOD & CO.,

EUROPEAN PHARMACISTS AND MANUFACTURING CHEMISTS
MOUNT ROAD, MADRAS.

MARKET SUPPLEMENT.

SATURDAY, OCTOBER 16, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (September 24, 1897) says:—The catalogues this week were on a very limited scale and the small supplies meeting a steady demand were readily disposed of at firmer prices.

About 400 bags East India were offered but all bought in.

Guatemala formed the bulk of the Central American brought forward; colory grades attracted keen competition, values showing an advance of 1/- to 2/-, whilst for ordinary and medium qualities previous rates were fully maintained.

A sharp rise occurred in futures this week of 1/6 to 1/9 on smaller Brazilian receipts, but quotations have dropped back 9d on favourable reports of the growing crops.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending September 22nd, 1897, says:—Bank rate 2%. Bombay Exchange closes at 1s 3½d. Brazil Exchange 7½d. Rupee paper 3½% 62½. Silver 27d per oz.

We have no change to report in this article. Fine qualities still continue to realize extreme rates, whilst common sorts remain inactive. Brazil markets are steady.

The sales included:—5 barrels Plantation Ceylon sold at 85s 6d; 27 bags Ceylon bought in. Of 444 bags East India, 82 bags Mysore, 282 bags Neilgherry, and 80 bags Pulneys were all bought in; 12 bags Jamaica sold at 96s; 1,254 bags Guatemala chiefly sold at 56s to 104s; 325 bags Salvador part sold at 60s to 66s 6d; 1,302 bags Nicaragua chiefly sold at 51s 6d to 58s; 689 bags Vera Paz and Coban part sold at 68s to 79s; 1,073 bags Columbian chiefly sold at 51s to 102s; 22 bags Peruvian bought in; 47 bags Guayaquil bought in; 42 bags Cape de Verde sold at 54s 6d to 56s; 59 half-bales Mocha small part sold at 78s 6d; 24 bags Liberian Ceylon 34s to 54s 6d; 39 bags Liberian Borneo 27s 6d to 30s 6d; 82 bags East India Liberian chiefly sold up to 56s 6d; 168 bags Liberian Johore bought in; 1,375 bags washed Santos small part sold at 54s 6d to 76s 6d, and 1,373 bags Santos on quay terms bought in.

Daily receipts in Brazil have averaged 15,286 bags in Rio, and 32,714 bags in Santos.

Futures have fluctuated considerably during the past week, owing to the contradictory reports which have been received about the growing crop, and the close is weak, though quotations shew an advance of 1s 3d to 1s 6d viz.:—Good average Santos in Havre, December delivery, fcs. 43.25, in Hamburg pf. 36, and No. 7 low ordinary Rio in New York \$6.65.

To-day's London official quotations are:—

	Sept.	Dec.	March	May	July.
RIO	33/-	33/6	—	—	—
SANTOS	35/-	35/3	36/-	36/3	36/9

We quote:—

Ceylon, mid. to good mid.	102/ @ 106/	Costa Rica, mid. to fine...	84/ @ 110/
Do. small to low mid.	79/ „ 101/	Do. ord. to low middling.	62/ „ 83/
East India, mid. to good		Jamaica, good to fine ord.	53/ „ 68/
mid...	90/ „ 103/	Do. greenish to fine	
Do. small to low mid.	72/ „ 89/	colory...	75/ „ 125/
Guatemala, mid. to fine...	82/ „ 106/	African	30/ „ 33/
Do. good ord. to low		Columbian, ordinary	48/ „ 53/
mid...	61/ „ 81/	Do. good ord. to	
Salvador, good ord. foxy		low mid...	54/ „ 81/
greenish...	57/ „ 58/	Do. mid. to fine...	82/ „ 104/

Receipts in Brazil compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
RIO	1,300,000	973,000	733,000
SANTOS	2,286,000	1,623,000	1,088,000
	3,586,000	2,596,000	1,821,000

Landed last week ... 560 tons. Deliveries ... 523 tons. Stock ... 12,096 tons.
Do. last year ... 273 „ „ „ 567 „ „ „ 9,409 „

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated September 24th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1ST JUNE TO DATE

	Indian.	Ceylon.	Java.
1897-1898...	338,222 packages.	447,611 packages.	14,667 packages.
1896-1897...	340,294 „	389,391 „	17,428 „
47,360 pkgs. INDIAN	} Total 68,261 packages were offered in public auction this week.		
20,194 „ CEYLON			
707 „ JAVA			

The demand which usually sets in towards the termination of the summer holidays appears to have commenced, and buyers generally are therefore beginning to operate with more confidence.

Indian. The larger supply met with a steady demand for all descriptions, the better qualities being in strong demand at somewhat improving rates while commoner descriptions continued fairly steady. The official telegram from Calcutta showing only slight increase in shipments to U.K. to the middle of September rather tends to give buyers confidence, while the revised estimate reducing the expected supply by eight million pounds and giving the probable shipments to U.K. as lbs. 130 millions, against lbs. 132 millions last season, should have a beneficial effect upon prices.

The following official wires have been received from the Indian Tea Association:—“Shipments to U.K. from the 1st April to the middle of September were 58,150,000 lbs., against 57,690,000 lbs. for the same period last season.” “The revised estimate of the present season's crop of Indian Tea is 148 million lbs., of which 130 million lbs. will be available for export to Great Britain.”

The following averages are worthy of note:—“Jonktollee,” 1/6½; “Budla Beta,” 1/6½; “Margaret's Hope,” 1/5; “Jokai T Co. Hukanpukri,” 1/4½; “Runglee Rungliot,” 1/4½; “Selimbong,” 1/2½; “Assam Fron. T Co S.,” “Singlo T Co Napuk” and “Tingri T Co Hoog,” 1/2½.

Week's av. of Tea sold on Garden Account, 1897, 36,924 pkgs., av. 8½d. 1896, 27,360 pkgs., av. 10d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	15,953 p 10½	15,636 p 11	99,813 p 11½	105,348 p 11½
Cachar and Sylhet.	12,893 p 6½	4,681 p 8	57,252 p 6½	55,010 p 7½
Chittagong	—	—	1,132 p 6	552 p 6½
Chota Nagpore	154 4½	110 p 4½	356 p 5	402 p 6½
Darjeeling	2,271 p 11½	1,958 p 19¼	23,366 p 11½	21,561 p 11½
Dooars	3,543 p 7½	3,841 p 8½	29,498 p 7½	27,864 p 7½
Kangra, &c.	120 7½	166 p 7½	2,766 p 7½	397 p 7½
Neilgherry	144 p 6	—	1,956 p 7	890 p 7½
Terai	1,377 p 7	894 p 7½	6,304 p 7½	2,714 p 7½
Travancore	470 p 5½	74 p 5½	2,217 p 6½	8,351 p 7½

Total sold on Garden Account 1st June to date 1897, 235,060 pkgs., av. 9½d. 1896, 224,666 pkgs., av. 9½d.

Comparative prices of Indian Tea in London:—

		1897.	1896.	1895.	1894.
DUST.	(Fair ordinary, dark liquor) ...	3½d	4½d	4½d	3½d
FANNINGS.	(Red to brown, strong rough liquor) ...	4d	5½d	5d	4½d
BROKEN TEA.	(Brownish to blackish, strong liquor) ...	6d	7½d	6d	6½d
PEK. SOUG.	(Blackish greyish, useful liquor). ...	6½d	7½d	7½d	7½d
PEKOE.	(Greyish to blackish, some tip, useful liquor) ...	8½d	9½d	8d	8½d
PEK. SOUG.	(Blackish greyish, inferior liquor). ...	4½d	5½d	6½d	5½d
PEKOE.	(Blackish greyish, some tip, inferior liquor) ...	5½d	6d	6½d	6½d

Ceylon. Offerings were comparatively light and comprised 20,194 packages against 26,184 last week. The market was strong for all descriptions at a slight advance in rates, good liquoring Teas being in special demand. The general quality shows an improvement. Export orders continue to be a help in supporting prices and there is no doubt the foreign demand for Ceylon Teas is becoming of great value in relieving the London market. The following averages may be mentioned: "Newera Eliya Est. Co. Park," 1/3½; "Associated T Co Silver Kandy" and "Ingestre," 1/3½; "Diyanilakelle," 1/2½; "Mahagastotte," 1/1½;

"ST Co. St. Leonards" and "Holmwood," 1/1; "Talawakelle," 1/0½; "Alnwick," "Campion" and "CTP Co. West Holyrood," 1/0½.

Average for week nearly 8½d., against rather over 8½d. for same time last year.

Ceylon Tea sold on Garden Account 1st January to date 1897. 844,502 pkgs., av. 8½d. 1896, 751,168 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

		1897.	1896.	1895.	1894.
PEKOE SOUG.	(Ordinary leaf; fair liquor) ...	6½d	6½d	7½d	6½d
PEKOE	(Ordinary leaf, little twist; fair liquor) ...	7½d	8½d	8½d	8½d
PEKOE SOUG.	(Rather bold leaf; indifferent liquor) ...	5½d	5½d	6½d	5½d
PEKOE	(Somewhat bold leaf; indifferent liquor) ...	6d	6½d	7d	6½d

Java. The 707 packages brought forward comprised invoices from three Estates, the Teas selling mostly with good competition at steady prices.

Bank rate 2½ per cent. Exchange on London three months sight.—Calcutta 1/3½, Colombo 1/3½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8½d.) September 24th.

GARDEN.	Total.		Average.		Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	144 p	6	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Brooklands	40½c	6½	40½c	† 6½	...	...	...	...	...	...	...	...	...	...	...	...
Hocorra	20	4½	7	† 5	5	† 4½	...	...	...	...	...	...	...	...	...	...
Prospect	84 p	6	...	...	28	6½	20½c	6½	15	5½	...	...	...	...	...	...
Travancore	470 p	5½	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Braemore	161 p	5½	20½c	7	47	5½	66½c	6½	...	...	15	4½	13 p	4 5½	...	...
Glenmore	70½c	5	...	...	44½c	4½	25½c	6	...	...	1½c	3½	...	...	...	...
Isfield T Co	39	7	...	...	...	...	39	6½ † 7	...	...	...	...	12	4½	...	...
P	12	4½	...	...	...	...	...	...	...	...	...	...	...	...	...	...

† Prices marked thus represent highest offer in the room.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, OCTOBER 23, 1897.

[No. 30.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c. Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 29th October 1897.

SEASON REPORTS.

Nilgiris. SHOLUR, 13th October.—Rain continues with heavy mists and thunder. Rainfall to date 50.14. Temperature 61° to 68°. *Labour.*—Plentiful. *Grains.*—Still dear.

Coorg. POLLI BETTA, 21st October.—Weather has cleared up since Saturday. Coffee looking fine though "leaf" is not absent. Crops beginning to ripen up. Some "fly-picking" will be begun next week. *Labour.*—Sufficient in most cases. *Health.*—Fair. Prices of grains still high.

S. E. Wynaad. PUNDALORE, 20th October.—*Weather.*—The heavy showers that began at 2 P.M. on the 13th inst. lasted till Monday, the 18th idem, on every afternoon; 19th and 20th no rain, and the monsoon seems to have left us and we are having bright sunshine during the day and cold at nights. *Crops* are ripening and fly picking is carried on. *Plant-disease.*—No change, same as last reported. *Health.*—Good. *Grains.*—The same as last. I believe the merchants bring cholum at Rs.2½ per Pulla and sell at Rs.5-4 per Pulla, and no one to question. *Labour.*—Sufficient.

Nellampathy(British). 20th October.—*Weather.*—Rain for week 1.15, to date 158.36. This last week has been rainless except for last Friday night, when we had a thunderstorm and 1.15 fell. Since then it has been bright during the day and cloudy at night with heavy dew. It would seem the S. W. has left us, and no one is sorry. *Coffee* ripening all over very fast and folks are getting their pulpers ready to deal with whatever little fruit there may be. Gram 11½ meas. per rupee. Rice as last reported. *Leaf-disease.*—Old coffee very nearly free of it, but a lot of it showing in last year's clearings and this year's plantings. *General Health.*—Good.

GENERAL NOTES AND ARTICLES.

Thornless E. litho-
spermas.

It is a wonder to us, that after all has been published on this subject, most grotesque misconceptions are still held, and firmly held, by many planters. We shall touch as briefly as possible on one or two of these errors. Firstly, we may confidently assure our readers that, as far as we know, the thornless variety cannot be obtained anywhere save from the Manager of the Arienkow estate, Shencottah. It is certainly not obtainable in Java, its original home, nor in Ceylon, in both of which places no one has troubled himself about the question at all. Next, as to its supposed expense. Planted out at 12' x 12', only 300 odd plants are required per acre. This, allowing for failures in germination, comes to about one rupee eight annas per acre—a truly terrible sum to waste! If planted in tea as wind breaks and allowing two double rows per acre, the cost of the seed amounts to, say, twelve annas per acre.

Gardens.

Among the various helps to render the life of a lonely planter more endurable, none are of greater use than gardens. It is to be greatly regretted that proprietors are often greedy of their land being used for any but what they call "estate purposes" that they insist on the coffee or tea running right up to the very doors almost of the bungalow. Nor if there is one thing a planter loathes after the day's work is over, it is to be confronted with the sight of the monotonous bushes among which his daily work lies. To achieve complete rest and recuperation, it is essential that he should be able, for the nonce, to cut himself adrift from his work as much as possible. Without this slight change of scene, an almost unendurable disgust sets in, ruinous to anything like good work and consequently entailing loss to the proprietor. Large gardens or extensive shrubberies should be considered a *sine quâ non* to all estate bungalows, and every inducement should be given to managers and superintendents to make their estate homes as comfortable as possible.

Weather lore.

Weather lore of a certain accuracy may be attained, in the planting districts, without excessive difficulty. This holds good at least in the duration of the monsoon currents. For instance in a S. W. Monsoon district, during the N. E. Monsoon, a cessation of the N. E. winds generally preludes rainy weather. *Vice versâ* in a N. E. locality, there is little chance of rain as long as the S. W. current is strong. A change in the currents may be observed some days previous to the actual change in the weather, by noting the direction of the upper strata of the clouds. For it is always in the upper strata that the first indications are found. The lower strata of clouds merely indicate the course of the local winds, the original direction of which are apt to be modified exceedingly by the local conditions of hills and valleys, forests and plains. Aided by hygrometers, such as wet and dry bulb thermometers, or more homely appliances, very accurate and useful forecasts can be made.

Planters' Provident
Fund.

The most difficult of all tasks is to persuade the public, or a section of it, to take precautions against

any but the most obvious of dangers. Sometimes even their very obviousness acts as a deterrent. We may mention for instance, the discomfort and dangers of a planter being suddenly cut adrift on losing his billet. The possibilities of such an occurrence are recognised in the most matter-of-fact, not to say, slothful manner. To guard against it taking place is of course impossible. It is surely practicable to devise a means whereby its attendant losses and dangers are reduced to a minimum. It would not prove a matter of much difficulty to devise a scheme whereby subscribers to a fund would, after a certain term, be entitled to receive an "out of work" subsistence allowance for a few months. The funds required need not necessarily be great, and if interest were taken in the matter by those really concerned, the capital would be forthcoming easily enough. It is just this difficulty, however, that makes things so hopeless.

Manuring old trees.

The unwisdom of expecting manure to give its best results on old trees without the use of the knife is not as generally recognised as it should be. In particular instances the old trees may be still in the best of health of course, and pruning might easily cause more damage than good. We are treating here of those cases in which the original stems are so knotted and gnarled that the sap channels, through which alone the manure juices must pass, are blocked and encumbered with obstructions of all sorts. Sometimes, indeed, these obstructions do far more than simply hinder the passage of the sap: they actually divert it from its proper destination. Woody malformations of the bark, excrescences both in and outside the cambium, are by no means infrequent. These act like cancers, absorbing the nourishment of the crop for their own well-being. In these cases, it is impossible to clear out the old sap channels: a fresh arterial system must be constructed. And the only way to do this is to cut down the useless stem, and with the help of manure, produce another one in its stead.

THE RAILWAY FOR THE MYSORE AND COORG
COFFEE DISTRICT.

I was glad to see that Mr. Pilkington, representing the North Mysore Planters Association at the Mysore Representative Assembly, held during the Dassarah, broached the subject of the line which I lately sketched out, namely from Kadur *viâ* Chikmagalur, Hassan and Sidapur to Tellicherry. I have only seen the very brief report, given in the *Madras Mail* of 11th, but it is interesting to know that the scheme finds favour with that section of the planting community and that it has thus been brought prominently to the notice of the Mysore Government. Let us hope that the other districts concerned may join in supporting the scheme. The Dewan's reply was to the effect that the Tarikere-Birur line would first be completed (it is now in course of construction) and the extension considered afterwards.

In his address at the opening of the assembly the Dewan said in referring to the subject of Railway projects: "The projected Railway from Arsikere *viâ* Hassan and Manzarabad to the West Coast is still under consideration. The difficult problem of the best and most economical route

and method for the ghaut descent is being carefully investigated by the Durbar."

Now, therefore, is the time for the planters to represent the marked advantages of the proposed line to Tellicherry over that to Mangalore, namely that it will bring the line within reach of *all* the coffee districts of the province and serve Coorg as well, while affording accommodation for the extensive tract of country through which it would more immediately pass. And while thus accommodating a large stretch of country, the actual length of the line would not greatly exceed that to Mangalore, whereas the latter would only serve a comparatively small portion of the coffee districts, and but a small tract in the Mysore Province altogether. Coorg, too, would be entirely excluded. I have been told that a flying survey of the ghaut on the Tellicherry line showed it was not an easy portion to negotiate, but I cannot imagine its being worse than the long Mauzarabad ghaut, where I believe some tunnelling would have to be done. Seeing the very great advantages the Tellicherry line offers, nothing short of its being proved that the ghaut forms an insurmountable barrier should cause it to be abandoned; but such a state of things I cannot imagine possible.

Mr. Tatham's suggestion is that the Madras Railway Company, which is now extending from Calcutt to Tellicherry, might take up the construction of this line. It would certainly be a good opportunity for annexing additional country to work upon, for they have sadly lost ground. The Southern Mahratta and South Indian Companies, with their metre gauge lines which are found much more suitable for Indian districts than the old expensive broad gauge, are gradually shutting out the Madras Company, and it behoves the latter to wake up, or it will be left out in the cold. If free to construct on the metre gauge, this new line would afford a capital start. It would also form an important line for future extensions, seeing it would connect the interior directly with the coast. It would probably place within their reach the connecting branch to the town of Mysore and secure to them the country requiring railway accommodation in that neighbourhood. More than this, the present line between Bangalore and Mysore is the property of the Mysore Government and in time they might either acquire it or arrange for working it as the Southern Mahratta now do. Such an arrangement along with their extension to Tellicherry would link them with their present Bangalore line and give them the whole stretch across from Madras.

That we shall see a railway from the town of Mysore to the West Coast before long, I think there is no reasonable doubt. With therefore the proposed line from Kadur to Tellicherry and one from Mysore joining it at Periapattam, they would have a very fair extension of their system and probably further ground to work upon.

The extension from the town of Mysore to join the Tellicherry line adds another to the arguments in favour of that project.

Regarding a 2-foot railway remarked upon in the *P.O.* of 25th September (No. 26), I do not think the Government of India would consent to a break of gauge, especially in a line running to the coast in connection with the metre system established in the interior. The average cost of the metre gauge is not, I believe, much over Rs.70,000 per mile. The 2-foot line may do for feeders, however, and

I think the time will come when we shall see this description of railway extensively used for this purpose and where traffic is light.

STEAM.

LETTERS TO THE EDITOR.

ANSWERS TO CORRESPONDENTS.

["Will, Mysore," and "Indian Planter," unauthenticated.—Ed.]

KUTCHA BUNGALOWS.

SIR,—Referring to "Kutch's" letter in *P.O.* of 9th current, regarding his enquiries about building with rammed earth, he might get the information he wants from the President of the Coorg Planters' Association, Mr. Logan, the walls of whose bungalow I believe are built of this material. I have heard that if well done, it is quite as strong, if not stronger than, brick and if suitable earth is obtainable near the building site, much cheaper. However, I have no practical experience myself, but in case "Kutch's" letter does not elicit directly through your columns the information he wants, so far at least as rammed earth is concerned, this may put him in the way of obtaining it. I have no doubt Mr. Logan, an old and experienced planter, would be glad to help a brother planter in such a matter. His bungalow, too, I think is roofed with iron, so he may be able to help "Kutch" in that as well.

PLANTER'S FRIEND.

SUGAR GROWING—INFORMATION WANTED.

SIR,—Will some of your readers kindly enlighten me about sugar growing in India?

1. Cost of production.
2. Time for young cane to come into bearing.
3. Crop per acre.
4. Value in this country per cwt. of sugar.
5. Length of time cane will last, and if they can be cut more than once; if so, how often?
6. Is it necessary to irrigate cane?
7. Are there any cheap books on sugar planting?

SUGAR.

TEA SEED FOR MYSORE.

SIR,—In answer to "Coffee's" enquiry in your issue of 9th instant, I fancy he will find a *jât* once removed from Indigenous the best tea to plant, provided he is well below frost range. The heavy rainfall, 250 inches, is of course a disadvantage, for during the heavier bursts tea stops flushing. Wind, both S. W. and N. E., if excessive, produces the same effect.

Most excellent seed of the *jât* I recommend can be obtained of Messrs. Barry & Co., 5, Lyon's Range, Calcutta. I have planted it myself and can testify to the quality. If "Coffee" will mention my name and say that he requires similar seed to that supplied me, I am sure he will be well served. The seed should be shipped by direct steamer to Madras, and cut across country by mail train to the nearest Railway Station.

I may add that I am not interested in any way in recommending Messrs. Barry & Co. Seed can be procured from Ceylon, but my experience is that that from Assam is more to be depended upon in point of *jât*.

GRANVILLE L. ACWORTH.

CENTRAL TRAVANCORE PLANTERS' ASSOCIATION, }
PEER MAAD, *via* PERIACOLAM, 14th October 1897. }

COFFEE.

An up-to-date book on coffee.

During the last ten or fifteen years, the advance made in the scientific cultivation coffee has been

so great that most of the literature extant, which was published previous to that time, has become altogether antiquated and out of date. We doubt in fact whether it be in the power of any one planter to compile an authoritative work embracing the latest modes of coffee-cultivation in all their branches. We are at present still in a state of transition, most of the systems in vogue being either antiquated or experimental. Again each district almost must be considered on its own merits. What succeeds beyond all doubt under certain local conditions is very apt to lead to failure when carried out in other districts with differing local conditions. The chief of these differences are temperature, rainfall, and soil. The work of the "complete planter" is to discover the precise effects of each of these controlling features, singly and in combination. At present our knowledge is vague, empirical and unordered. It needs to be defined, scientific and ordered.

Planting at stake.

We are not aware whether the system of planting at stake in the field, in lieu of nurseries, has been tried on coffee plantations. Yet to judge of the increasing popularity of this method on tea gardens, it would seem worthy of careful trial. The advantages of sowing the seed, either before or after germination, direct in the field are many. First of all its cheapness is undoubted, saving altogether the cost of expensive nurseries, baskets, and transplanting. Besides this, it is undoubtedly a fact that unless the most scrupulous attention is paid to transplanting—either into the basket or in the field direct—a very large proportion of the young plants have their tap roots shamefully mishandled. Vacancies again are usually considerable. Whereas planting at stake is one of the simplest and safest methods conceivable. If the weather is favourable, there is no need even to germinate the seed before sowing. If, however, germination is essential, care must be taken to sow out the seed in the field as soon as the tap-root shows itself. To ensure safety, from such causes as insects, etc., it is best to plant 3 seeds in each pit, some 3—4 inches apart, so as to allow of subsequent transplanting for neighbouring vacancies. The chief points to be observed are that the tap-root, if germinated seed be used, should be of course placed downwards, and that only a very light layer of earth should cover the seed. Too deep planting is perhaps the most common of all faults in sowing seed of any kind. Half an inch is ample. The next operation is ferning, which should be exceedingly thick, especially *above* the stake, so as to prevent a wash of soil from above covering the seed too deeply. If the ferning be carefully done, all that is needed in the shape of subsequent weeding is to remove all weeds growing round the fern. The shade cast by the fern will check the growth of weeds under it to a very large extent. One point we have omitted so far, and that is, the dangers of drought. If the ferning has been properly attended to, drought, unless exceptionally prolonged, is not to be feared. The writer has himself witnessed an instance of stake-sown seed, though this was tea, not coffee, successfully withstanding a five months' continuous drought in a high elevation district. On the other hand, in excessive rain the fern might be slightly opened from the top, *not* removed, to allow of ventilation and to prevent mildew. To conclude, the writer contends that planting at stake is cheaper, safer,

simpler and altogether better than transplanting from nurseries.

VINDICATION OF COFFEE CULTIVATION WITHOUT MANURE.

In P.O. of August 28th, H.G.R. criticises "Coffee Cultivation without Manure," "as a physical impossibility to be relegated to dreamland," and in support of his contention quotes certain authorities to prove his argument that the minerals in humus are insoluble and unavailable for the cultivated crop, and that nitrogen is of small importance, and quotes certain authorities, to wit an analysis of Dr. Voelcker's, and quotations from Prof. Munro and Fream, and winds up with the assertion that coffee cultivation without manure is bound to lead to too much humus, and foulness and sourness. Now, whatever may be said for or against "Coffee Cultivation without Manure" scientifically, or what everyone is more interested in, practically, it is to be hoped that it rests on a firmer basis than H. G. R.'s criticism. I will deal *seriatim* further on with his authorities, but in the meantime, just for the sake of argument, am prepared to grant all his points, and will presume that his estate is so fortunately circumstanced that humus is a superfluity and nitrogen a luxury, then all that has to be done to supply coffee with mineral ingredients is to *burn* all the loppings of his E. L. trees and his coffee will be amply supplied with the very minerals he requires. He wants potash? He will have some difficulty in getting a more concentrated form of potash manure than E. L. ashes, containing as they do 35.14% of potash. E. L. ashes are thus twice as rich in potash as kainit, a purely potash manure. The other ash constituents of coffee are very liberally provided for in E. L. ashes as will be seen from the following analysis of the ash constituents:—

Erythrina Lithosperma ashes contain				
% Potash	...	...	...	35.14
Lime	...	...	...	9.14
Phosphoric acid	...	...	...	8.41

By burning instead of burying, the obnoxious humus is destroyed, and the useless nitrogen is dissipated, and E. L. supplies all the minerals that coffee wants, in a soluble form after H. G. R.'s own heart. He wants minerals; he has got them from E. L., so that coffee cultivation without manure stands exactly where it did and his criticism falls to the ground, or more strictly speaking is reduced to ashes, and we are exactly where we started from in the original proposition of coffee cultivation without manure, *i.e.*, that as long as the shade tree lasted, coffee would be amply supplied with all it wanted. It is strange that your correspondent should have overlooked so simple an expedient of adapting coffee cultivation without manure to his own system of cultivation, the whole process of conversion being brought about by the application of the familiar fire stick, which destroy all he objects to and leaves him with all he wants.

Having proved that his criticism won't stand fire, and indicated how he can adapt coffee cultivation without manure to his own system of cultivation, I will now deal with his authorities that he quotes in support of his contention. To begin with the

COFFEE SHADE TREE.

Sun-dried *Erythrina lithosperma* loppings, &c., contain per ton:—

61.50 lbs. of Nitrogen, 57.38 lbs. of Potash, 14.92 lbs. of Lime, and 13.68 lbs. of Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of the above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only *thornless* variety extant, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE, SHENCOTTAH.

analyses by Dr. Voelcker, on which he lays such stress, I am not disposed to attach much weight to them. They appear to be analyses of soils sent to Dr. Voelcker for analysis. Had Dr. Voelcker been specially employed to report on coffee soils, and the outcome of his investigations was his conviction that a soil containing .032 nitrogen was the best for coffee, I should have a great deal more respect for the analyses than I have now. Perhaps H. G. R. will give us more analyses of good coffee soils by reliable men showing as low percentage as .032 nitrogen, as at present we have only the one he has quoted, low percentage of nitrogen in which might be explained by other causes. We are asked to infer that the summer has arrived with the arrival of the solitary swallow. In reference to coffee soil analyses I prefer Mr. Hughes as an authority as he was employed by the Ceylon Planters' Association for the specific purpose of analysing coffee soils, and in his book in giving the analyses of two coffee soils selected as having given good crops *without manure* for 35 and 40 years, respectively, we find the high percentages of nitrogen of .224 and .213 respectively and also unusually high percentages of phosphoric acid .166 and .185. These percentages are interesting as showing that a permanently fertile soil should be well supplied with both nitrogen and phosphoric acid, and afford an explanation of the great benefit fish manure usually is. There is another instance of a soil containing .40 of nitrogen bearing good crops, and I am personally acquainted with a soil containing a very much higher percentage still that regularly and steadily gives heavy crops. This soil was specially taken from a few trees that had given regular heavy crops and was specially selected with a view of ascertaining if there was any peculiarity about it conducive to large crops. In fact, it was selected as an ideal coffee soil, as a soil capable of giving heavy annual crops and withstanding the excessively virulent form of leaf disease that this district suffers from. Now this soil shows the enormously high percentage of 1.26 nitrogen or *two and half times as rich as cow dung*. Thus we see that an unusually high percentage of nitrogen is not inconsistent with cropping ability, and I believe as a matter of fact that the measure of fertility of a soil for coffee might be approximately gauged by the nitrogen shown on analysis, i.e., as long as the humus containing the nitrogen is in the form of *vegetable mould* and not humus in the form of *peat*. There is also no doubt that an ample supply of nitrogen is of the greatest benefit to enable trees to withstand and recuperate from leaf disease. Your correspondent maintains that under coffee cultivation without manure an injurious excess of humus is bound to arise. I said before that excess of humus is a theoretical danger that is not likely to arise in practical coffee cultivation, and nothing he has advanced alters my conviction that I am right.

The sight of coffee trees flourishing among the mouldering remains of some monarch of the forest is an every-day one. Here we see coffee revelling in an amount of humus it would be impossible to obtain from the loppings and thinnings of shade trees. In forest clearing there is frequently some portion remains unburnt, and yet coffee grows freely in the unburnt portion among the accumulated humus of centuries. These instances afford, I think, ample evidence that no danger is to be anticipated that any quantity of humus is derived from shade trees. H. G. R. makes a great point of insolubility of minerals in humus, and quotes Fream, Munro, and a quotation from the Royal Agricultural Society's journal quoted by me in *P. O.* of March 6th. Were the minerals insoluble and unavailable for plant food, I quite admit coffee cultivation without manure would be demolished; but on this point I directly join issue and say that they are soluble from the showing of his own authorities which I will deal with *seriatim*. H. G. R. says: "Cattle manure contains all the constituents that crops require, and is thereby entitled to rank as a perfect and general manure." (Fream.) Again, "all vegetable matter retains a stock of all the minerals necessary

to plants." (Munro.) If cattle manure is a perfect general manure, it is hard to see logically why vegetable matter should not be equally so classed. Cattle manure is vegetable matter, and compared with vegetable matter in the form of E. L. is in a very insoluble form. To quote again, Fream says: "It was formerly thought that humus was capable of serving directly as plant food, but this has been proved not to be the case." I have never made any claim that humus was capable of serving *directly* as plant food, nor am I concerned with erroneous opinions held formerly, but what I do maintain is that it serves *indirectly* and that on complete decomposition the minerals are available for the growing crop. To quote from H. G. R. again: "The following quotation from Prof. Munro would appear to partially account for this:—'The production of carbonic acid water and ammonia become slower and slower as the carbon, hydrogen and nitrogen in the decayed matter are left behind in combinations more and more difficult to break up, and the particles of humus, however long they have existed in the soil, never become entirely robbed of either of these three elements.' This being so and the minerals being bound up in the particles of humus, they cannot be set free until this combination is broken up." Quite true, I agree entirely with H. G. R. in his inference that the minerals cannot be set free till the combinations are broken up. The only question is, how long it takes to do it. The complete disappearance of the humus must surely mean the complete liberation of the minerals. It rather goes to show the great value of humus as a manure than anything else; up to the last it retains its value, never losing its virtue. Now for the quotation from the Royal Agricultural Society's journal quoted by your correspondent, viz., Deblingar sold all his cattle and adopted green-manuring *supplemented by artificial manures* in place of stable manure. H. G. R. quotes this to prove that green manures are incapable of supplying mineral food; but I don't see that it bears that construction: it only proves that the minerals in Deblingar's green manures were insufficient, not that they were unavailable.

H. G. R. says: "Experts are agreed that humus is not a source from which the mineral needs of plants are derivable." Again I differ, and will quote from Prof. Scott as to the availability of minerals in humus. He writes: "By ploughing in a green crop, the surface soil is enriched not only by the elements which the crop derived from the air, but also by *mineral* and vegetable matters which were brought up by it from the sub-soil. The green crop thus acts the part of a gatherer of plant-food, and makes it easier for any crop sown after this green-manuring to get its supplies from the decomposing vegetation present in the soil. The crop ploughed in has thus been made to act the part of collector of nourishment for future crops in a way that no mechanical sub-soiling or trenching could effect. Many of these crops, when ploughed in green, are, weight for weight, almost as good as farmyard manure, containing large quantities of nitrogen, phosphoric acid and potash."

This seems to me to exactly support the theory of C. C. without manure, that by employing deep-rooted leguminous shade trees assimilating the same mineral constituents as coffee, the coffee will be amply supplied with all the mineral ingredients it wants. It is certainly dead against the non-availability of minerals in humus, and certainly seems to be common sense. I see nothing in H. G. R.'s authorities to support his theory as to minerals in humus being unavailable and as to humus being injurious so that I was right in characterising it a theoretical danger only. J. W. H. shows in his accounts of trying humus *ad lib.* in coffee, how the more he gave it the better it liked it; so that I have no hesitation in asserting that C. C. without manure is absolutely untouched by his criticism, and that so far from being relegated to dreamland, dreamland is not an inappropriate name for the country whence H. G. R.'s criticism emanates.

I have ever held that practice and science are synonymous terms, and whether I have given the correct scientific explanation of the success of coffee with E.L. or not, its revival must be attributed to other causes than the injurious effects of E.L. humus and the insolubility of the minerals therein. If H. G. R.'s theory was sound, as the coffee was very far gone when E.L. was planted, surely the shade trees should rather have hastened its decease, by converting large quantities of potash, lime and phosphoric into insoluble humus, and enriching the land with needless nitrogen, than facilitate its resurrection. To maintain that the minerals in humus are insoluble is, in my humble opinion, contrary to nature, contrary to reason, and contrary to practice. Now as to the question of crops. To begin with, crops are not invariably the result of a system of cultivation or the application of any kind of manure. Crops on one estate might fairly be compared with crops on other estates in the neighbourhood subject to the same local influences; but to compare crops from a district where coffee has a far more severe struggle for existence than it has in other districts more favourably situated would be misleading. A large crop in this district would be nothing out the way in others. As regards crops in this neighbourhood and for miles round, I can safely say that the E. L. shade coffee has regularly and persistently given better crops than any other coffee. This year I am sorry to say that the crop is little better than nominal, in common with the whole district, but E. L. can hardly be held responsible for this. The extraordinary, and to all intents and purposes, monsoon burst in February when it rained for ten days consecutively and heavily is surely sufficient excuse for any ruin of crop. What crop it will give next year it is impossible to say, but as it has got through leaf disease with practically no loss of wood, and as there is an ample supply of that necessary article, with an ordinary season there is no reason why it should not give 8—10 cwt. per acre comfortably.

This may be considered a triumph for E. L. as it has been brought about on old half-abandoned coffee. The growth and vigour of coffee is a thing there is no deception about; seeing is believing, and H. G. R. is welcome to come and see it, and once he had seen it, I have every confidence that he would be converted into a believer in *coffee cultivation without manure* and the virtues of E. Lithosperma in contending successfully with leaf disease; the unparalleled ferocity of leaf disease here is, I believe, unknown in other districts. I can show young coffee struggling for its existence (in new clearings) till the shade is well up, bare of leaves and primaries, killed back into old thick wood, crop or no crop, and the old coffee with the shade well established now a fine cover with its branches grown again from stumps of the original primaries. All this I can show your correspondent or any coffee planter who is sufficiently interested to come to this somewhat out-of-the-way district. There is another interesting fact in connection with E.L. and coffee, and that is the reduction in bushels of parchment per cwt. Before planting E. L. the first year I had it, it took 6.25 bus parchment; last year with the shade well up and utilised it took 4.67. These figures are eloquent alike of its worn-out condition and its improvement.

B. NELSON.

ARIENKOW, SHENCOTTAH.

TEA.

Tea in Mysore.

Coffee crops have been so bad in Mysore the last few seasons that rather more than spasmodic interest is being shown in tea. It would be well for experimenters to bear in mind the very great importance of the *jât* of tea chosen. *Jât* is everything nowadays; better, far better, to pay Rs. 150 per maund and

secure a first-rate *jât* than to pay Rs. 40 for even a good hybrid. South India is decidedly *not* the best place to buy good seed in, as planters here have only recently recognized the importance of the subject. Consequently most of the seed available is hybridised to a greater or less extent. The wisest plan would be to purchase direct from some reputable firm in Calcutta. Price in itself is of course no guarantee of quality, but it is equally certain that good seed cannot be obtained cheap.

In selecting land for experiment, it must be remembered that dry districts are particularly unfavourable. A large and fairly even distribution of rainfall is essential to the success of a tea-garden. While as to soil, why, the richer and opener it is, the better. Water-power available for driving the machinery in the factory is a great advantage.

Chinese competition.

The following extracts from a letter dated the 7th ultimo, from a tea merchant at Foochow, to a Ceylon resident have been placed at the disposal of the *Times of Ceylon*. The first one gives some interesting particulars about an estimated shortage of one-third in the China output; and the second contains very candid criticism on the present machine-made teas, though a hopeful tone is expressed regarding the more or less distant future:—

"The present season has not been a good one so far. Bad weather making short crops; small exports leading to better results than usual in Australia and London, and those better results reacting on the market here and raising prices unduly. Canada and U. S. A. having gorged themselves with old tea in anticipation of a duty (not imposed), are unable to buy, and so we are struggling along—idle half the time. Our crop will be one-third short, which means a deficit of 6 to 8 millions from Foochow.

"As for our machine-made teas; so far as they have gone they have been a failure, partly because they have tried the worst district, partly because of want of experience. The teas *look* handsome and golden tippy, but the liquor of the first two grades is hard and no richness, and the 3rd, 4th, and 5th grades tail away to nothing. *They say* that just recently they have made very much better leaf from pruned and manured trees under their own care; but I have not seen these. These teas are going to Australia, which seems to think better of them than London. A few hand-made teas from the good districts show very nice flavour, but they *don't keep*. There can be no doubt that China *will* compete again with Ceylon as soon as machines become *general* and good supervision is exercised, but I look for several years (5 to 10) before a hundred machines are spread over the country, and I look for 10 to 20 years before *foreign superintendence* will make the new style of making of any practical use for opposition. They are trying to get up a company here to take up the pioneer company's work—capital proposed 250,000 dols., half paid up; and the company has bought 50 or 60 acres in the name of *Chinese*, as no foreigner can at present hold land in the interior. Unless this company is taken up strongly—which I much doubt—delay is sure to occur in going beyond the present small concern, which can only operate about 200,000 lbs. made tea a year with *everything favourable*."

Best time for manuring.

It is true that it is not so nearly as important a question to tea-planters as to their *confrères* in coffee. Yet if one is desirous of getting the greatest benefit possible from the manure used, the question is certainly worth thinking out. Before trying to give a satisfactory answer, we must first see what the question really is. In other words, before deciding what is the best time for the manure to be applied, we must first decide what results would be most satisfactory. The answer is obvious: to get the greatest possible yield at the most

favourable time of the year for the manufacture of good tea. In the early part of the year flushes are usually abundant enough without any extraneous help. Moreover, the teas made at this time are by no means perfect. The autumnal teas are generally the best in all districts, and as a rule it is precisely this season that crops are scarcer. It may be safely said, therefore, that it were best for the action of the manure to be delayed till June or later. How is this to be accomplished? By careful timing of the manuring operations. Especially is this timing necessary with quickly-acting artificials, such as bones and poonac. Granted light showers and careful application, the effect of these manures is plainly shown inside of two months, that is to say if the trees are in good heart. If applied in dry weather, three or even four months may elapse before they begin to work. So that in N.E. districts, manuring could be safely begun in January to be completed, if possible, by the end of April. In districts liable to frosts it would be unwise to manure after this date, as frost-bitten flushes are absolutely wasted.

Another important point is to ensure that the manure when applied is not liable to be washed away—by surface or subsoil drainage—by heavy rains. Thus in S.W. districts, post-monsoon manuring with artificials is essential. Cattle manuring may be perhaps undertaken before the rains set in, as the deep roots of tea would probably recover most of the valuable solutions washed down into the subsoil, while a large proportion of the manure would still be insoluble.

MR. SHARPE'S PATENT OXIDISER.

THE following extract, which ill bears "boiling-down," will be read with great interest by our readers. Small proprietors will be probably debarred from purchasing Mr. Sharpe's machine by reason of its expense. A little thought will show, however, how simply and easily the principle enunciated may be adopted, and without the least infringement of his patent:—

The *Home and Colonial Mail*, in an article entitled "Mr. Nathan Sharpe on the Oxidation of Tea," writes thus:—He contends that the time of oxidation entirely depends upon the amount of oxygen the *mal* (or rolled leaf) can get from moving air, at a speed, however, which does not force more oxygen on to the *mal* than is consistent with proper colouring. Acting on this idea, the rate at which the moist cool air should pass over the *mal*, he mentions, was very carefully calculated before the oxidiser left for India, and it proved correct at Lungla Tea Estate, Sylhet, with a temperature of 80° F. A beautiful colour was brought steadily on in 2 hours 45 minutes, and *ghanny* after *ghanny* was finished in this time. Against this, *mal* was placed on trestles, and covered with cloths in the ordinary way, and although the air coming into contact with this *mal* was several degrees higher than that passing through the oxidiser, it took 15 minutes longer to obtain a colour not to be compared with the oxidiser *mal*, whilst according to recent views the *mal* in the oxidiser should not, owing to lower temperature, have been ready until 15 minutes after the ordinary method *mal*. In the cup these two samples of manufacture were, says Mr. Sharpe, reported on by well-known Calcutta brokers, the oxidised teas being very highly commended. According to Mr. Sharpe the method now in vogue of laying leaf on cloths in trestles and then covering the *mal* with cloths is like wrapping up the *mal* to keep it warm, which it really does. Probably he says the heat thus generated sets up a fermentation, and therefore under these conditions it cannot be oxidised. Mr. Sharpe's theory is that the oxygenating of rolled leaf under the present system cannot be carried on correctly in large rooms, however admirably planned, because of the absence of unity of air current coolness, moisture and darkness. The three first must be under control; moisture especially must go with the weather, counteract-

ing climatic influences, and at times accomplishing what was a day before counteracted. In the absence of a certain air current coolness, darkness, and means for regulating moisture, irregular times of oxidation, irregular colours, irregular liquors, and a fluctuating quality must be the result.

"The time 2 hours 45 minutes occupied by the 'Simplex' oxidiser in oxygenating the *mal* might be by many thought short," remarked Mr. Sharpe. "There are many who perhaps think yet that the prolongation of this process is the desideratum, and that the attainment of this is to keep the leaf as cold as possible, even to the introduction of refrigerators."

"By an arrangement I have," says Mr. Sharpe, "I can nearly freeze the water in the oxidiser tanks, but this is an auxiliary which would not be included in my machine, unless ordered." The prolongation of the process of oxidation by a lower temperature than 75° F. is, in Mr. Sharpe's opinion, to be avoided, just as much as anything beyond 80° F., and in this view he claims that he is supported by not a few planters and one of the leading firms of brokers in Calcutta.

"There is no doubt that the process called fermentation is one of oxidation," says Mr. Sharpe, "for if the temperature of the non-moving air in one of the present fermenting rooms, filled with *mal* at the same time as a Simplex oxidiser with the air moving at the same temperature, were tried, the *mal* inside the oxidiser would be finished fully one hour before that in the fermenting room simply because colouring of the *mal* in the oxidiser has been gently encouraged, or, in other words, the *mal* is oxygenated by a free and constant supply of cool moist air whilst the *mal* in the fermenting room has been left to oxygenate itself. In the cup the oxidised teas would have all that could be desired in colour and liquor, whilst the fermenting room teas, through prolonged oxidation, would probably have a good colour, but the liquor would be soft."

The Simplex cool oxidiser, the inventor claims, oxygenates and prepares the *mal* for second rolling and firing better and quicker than ordinary fermenting-room methods, whether the fermenting rooms be cool or warm.

"Not only does the Simplex cool oxidizer," said Mr. Sharpe, "facilitate the oxygenation of rolled leaf through moving air, but it has the additional advantage of being able to control the moisture of the air that enters the leaf chamber according to the prevailing weather, the deficiency or excess of moisture being met with in the following manner:—

"The gunny cloth curtains at the sides of the machine present a cooling surface of over 200 square feet of absorbent material, through which the air that enters the machine must pass, and as is often the case there is a high percentage of humidity during the rains; all that is required is to regulate the supply of water to the curtains, so that they may be but slightly moistened. On other occasions they may require a greater percentage of moisture, or may be thoroughly wetted according to the readings of the hygrometer attached to the machine."

The oxidised teas have, when fully manufactured, Mr. Sharpe

The Wynaad and the Planting Industry of Southern India, by FRANCIS FORD, Re.1.

The Planting Directory of South India, Re.1-8.

Tea Planting from Seed to Cup in Tamil, with English translation. Re.1.

Sketch History of the Planting History of Wynaad, by the late ADOLPHUS ARTHUR WRIGHT. Rs.1-8.

Science and Coffee, by the late MR. WM. PRINGLE, M.S.C.I. Rs.1-8.

Report of Observations of Injurious Insects and common Crop Pests during the year 1883, with methods of Prevention and Remedy, by Miss ELEANOR A. ORMEROD, F.R.Met. Soc., &c., Re.1-8. Apply to

* "PLANTING OPINION" OFFICE,

3, ESPLANADE ROW, MADRAS.

states, a much blacker appearance than those fermented in the ordinary way, and this fact had been noted by the brokers in Calcutta, to whom samples were submitted. The inventor maintains that by carefully working the oxidiser, the crop of the season will maintain a high standard of quality, and improved and steady average prices, provided conditions in other departments are equal. With reference to the construction of the machine, Mr. Sharpe says that it may be inferred by some that the air propellers at the ends of the oxidiser have a clear thoroughfare, but this is not so. Gunny cloth baffles are placed behind the fans so as to prevent a blast of air moving over the leaf instead of the slight current obtained. The propellers have a splendid distributing power, overcoming the auxiliary baffles of side curtains through which the air must pass, and producing an equitable draught all over the apparatus.

Mr. Sharpe has placed a few additional items to the machine, including a hygrometer, so that planters can readily fix on a certain humidity that to their leaf might be essential, and thus the air can be kept at a marked point and regulated by the water valves to the curtains as the weather may demand. Mr. Sharpe states that the mechanical simplicity of the cool oxidiser met with the warmest approval of all who saw it on Lungla Tea Estate. He points out that there is no gearing or complicated mechanism to get out of order, and adds that those acquainted with life on Indian and Ceylon estates will readily appreciate the great advantage. The two air propellers, being the only moving parts, merely require $1\frac{1}{2}$ H. P. The machine is also very economical in water consumption, this only being about two gallons per hour, when most is required, while the economy in space is tremendous, the saving being 300 per cent of factory room.

DISTRICT ASSOCIATION.

NELLIAMPATHY.

PROCEEDINGS of a Meeting held at the Victoria Bungalow on Wednesday, September 29th, 1897. Present: Messrs. Barnes, Denny, Everington, Fenton, H. M. Hall, E. Jones, F. Jones, Lamb, Milne, Watts, and J. C. Abbott, *Honorary Secretary*. Mr. H. M. Hall in the Chair.

1. Proceedings of last meeting were taken as read.
2. The Honorary Secretary gave an account of the last meeting of the U.P.A.S.I. and of the action of the delegates of this Association, which was approved and confirmed. A vote of thanks for their services was passed unanimously.
3. Some discussion took place about Scientific Investigation, and it was resolved that a circular be sent round to ascertain what members would subscribe towards procuring the services of an Agricultural Chemist. The suggestion that the U.P.A.S.I. should endeavour to obtain the services of Mr. Cameron to improve the strain of coffee was approved.
4. *Wallenghy Bungalow*.—Six more estates were added to the subscription list, making a total of 19 now subscribing.
5. *Bazaar*.—Read letter from the Honorary Secretary to the Chief Engineer calling his attention to the insanitary condition of the bazaar and requesting him to have the boundaries properly demarcated, as stipulated by the owners of Poothapara estate when they gave the land for the extension.
6. *Roads*.—The Honorary Secretary was requested to write to the Dewan and ask him whether it was the intention of the Cochin Government to open up the Ghaut Road for wheeled traffic, and if so, when the necessary work would be begun.

A vote of thanks to the Chair terminated the proceedings.

(Signed) H. M. HALL, *Chairman*.

(„) J. C. ABBOTT, *Hony. Secy.*

ROUND THE BUNGALOW.

NOTES BY "A PLANTER'S WIFE."

The Garden.

Since the weather to a certain extent has begun to be brighter, one's attention is

naturally drawn towards one's garden. I have already begun to sow my annuals in boxes and baskets under shelter, and hope in a week or two to have them all out in the bed prepared for them which by Christmas will be a perfect blaze of colour; however, I am this week giving an idea of how a very pretty fernery may be made with very little trouble.

With a certain amount of care and attention, and a due regard to watering, fern will grow well even during the hot weather, and the amateur gardener who has not already a fernery should start one. This is by no means a difficult task, and the first step is to decide where would be the best place to have it; if you have some large trees, of a kind that do not lose their foliage in the hot weather, your fernery will look very well under these.

I have just had a very pretty one made in my garden in this way—first have a large circle marked out, say 10' or 15' diameter and dig out the soil to a depth of 2', and with large stones have a wall built inside the circle to keep the soil from falling in; in the centre of this circle have another circle marked out about 6' or 8' and another wall built round, and the bottom of the outside ring or circle paved with stones. The smaller centre circle must now be filled first with broken bricks or some such rubbish to a depth of 1 foot; then a good mixture of garden loam, leaf mould and a little sand, which should be piled up high to form a pyramid shape. In the centre plant a good sized tree fern, and cover the whole of the soil surface with quartz and pretty pieces of moss covered rocks filling in between the crevices with all sorts of pretty ferns. The outside circle is now filled with water and the fernery forms a small island. There must also be an inlet and an outlet for the water, a standing water would be very unhealthy. The ferns should be watered every day with a garden syringe. Ferns could also be planted round the top of the outside wall and form a fringe which would look very pretty.

Another pretty fernery, and perhaps more easy to make, is to build a high trellis-work house, in any shape to suit your fancy; the roof must also be of trellis-work, and the whole of the roof must be covered by creepers to protect the ferns from the fierce heat of the mid-day sun; if there are no creepers, some thin matting should be thrown over during the day.

The next step is to plant creepers all round the fern-house, for it will not look pretty until it is entirely covered; some quick growing creepers, such as *Humulus Japonicus*, *Ipomea Grandiflora* (the Moon Flower), *Convolvulus Major*, all of which grow very quickly, slower growing creepers may also be set at the same time and will come on later.

Inside the fernery the pots containing the plants should be arranged that there is plenty of room for walking about, and here arrange there an ornamental stand filled with masses of pretty ferns and hanging baskets with delicate trails of ferns or small creepers hanging from them will add much to the appearance of the interior.

I have had several hanging baskets made thus (which have the advantage of being very cheap). You know the basket kind of muzzle used by natives for putting on their bullocks' noses. I had 50 of these made rather larger than the usual size, lined inside with leaf moss, then some pieces of charcoal and filled up with leaf mould and placed my ferns in, covering the top with moss; then fasten three pieces of wire to the basket about 2 feet in length or longer as desired, twist the three pieces of wire together into a loop at the top and hang it on to a nail, and you will be surprised to see how quickly the ferns grow and cover the basket, when they look like green balls of ferns.

GOLD AND BLOOD.

MANY years ago I knew a man who expended a great part of a large fortune in buying gold, in coin and in bars. This he melted and with human blood and other unique ingredients, laboured secretly to prepare a mixture that should arrest all disease, renew vitality and prolong life indefinitely. I need hardly say that he failed. Not only did he fail, but one day an explosion took place in his laboratory which destroyed the fruits of his toil and left him senseless and badly wounded amid the wreck. The rest of his days were passed in an asylum.

Yet he was not the first man who tried that same experiment, and by thousands. To find the elixir of life was one of the main purposes of the science of alchemy, the barbaric ancestor of the modern

science of chemistry. But all that is now discredited. No doctor or student of healing even pretends to possess or to seek an essence of life.

What is undertaken, however, and successfully, is to ascertain the truth about nature's functions, and to help her perform them when they are impeded by disease.

Illustrations of what can be done on this line are plentiful. Here is one: "Twelve years ago," says Mrs. Eliza Matcham, of Armitage House, Sutton-on-Hull, "I had an attack of rheumatic fever. At the same time I had a bad taste in the mouth, poor appetite, and pain and weight at the chest after eating. I frequently spat up a quantity of greasy, fatty matter. Later I was afflicted with rheumatism in my hands and feet. Then I fell into a state of debility which continued year after year. I spent a great deal of money in doctoring, all to no purpose. Finally I was induced to try your medicine. In a short time my food agreed with me, the sickness ceased, I grew stronger, and the rheumatism by degrees abated. Now by taking your remedy occasionally I keep in good health. (Signed) Mrs. Eliza Matcham, June 2nd, 1893."

"For some time previous to 1887," writes another, "I was troubled with a digestive disorder. In the autumn of that year (1887) I got a severe cold, which brought on rheumatism and lumbago. I had great pain in the back and also in the joints. I consulted a doctor, who gave me medicines, and advised me to go to Buxton. I did so, but I am bound to say obtained little benefit from it.

"In January, 1888, I had another attack of rheumatic fever, which brought me down into a very low and feeble condition. For days and days together I was unable to eat or sleep. It was only by hardship and pain that I got about at all. Whilst on a visit to Little Downham, Cambridgeshire, some friends told me of the medicine furnished by you. I used it, and soon found relief, and gained strength. Cheered up and encouraged by this, I continued taking it, and now, by an occasional dose, I keep wholly free from rheumatism and other troubles. (Signed) Philip Hopkin, 20, Maude Street, Grimsby, November 14th, 1893."

The eccentric man alluded to in the first part of this article failed to cure any disease with his odd brew. It was costly, too, as I said. Blood is cheap enough, but bars of gold come high. He was a fanatic and a fool.

But here we have two instances in which rheumatism, a common and dangerous ailment, was cured by Mother Seigel's Curative Syrup, a remedy made not from blood and gold, but from the healing herbs of the fields and forests. And why was it cured thus so speedily and with such seeming ease? Because rheumatism is not a disease of itself, but a symptom of indigestion and dyspepsia. It is *this* universal plague that the Syrup scatters and drives away, its children following after. Thus we keep our blood in our veins and our gold—if we have any—in our pockets.

THOMSON'S ANTI-MALARIAL PILLS, THE PLANTER'S FRIEND.

The only known Antidote against Malarial Poison.

A sure and efficacious Remedy for Malarial Fever, Enlargements of the Spleen, Malarial Cachexia (Anæmia after Malarial Fever) and other Malarial Symptoms.

A Planter from Assam writes:—

"I have tried Thomson's Anti-Malarial Pills and find them to be most efficacious among my coolies. I can strongly recommend them."

SOLE AGENTS:

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1. For each circulation locally and by post Rs. 25.
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(This excludes extra postage where the weight of leaflets necessitates such.)

Advertisement charges are strictly payable in advance, except by w. approved customers.

MARKET SUPPLEMENT.

SATURDAY, OCTOBER 23, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (October 1, 1897) says:—Previous prices were fully maintained in Auction for the limited supplies brought forward, and in some cases value show an advance on last week.

Over 600 bags East India were offered and met good competition, fine colory grades realising very full prices.

Columbian, which has formed by far the greater part of the catalogues, was readily disposed of at previous rates for medium qualities, whilst fine bold descriptions were firmer.

The Terme market gave way a further 9d during the week owing to continued heavy receipts, but at the close quotations show a recovery of 3d from the lowest.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending September 29th, 1897, says:—Bank rate $2\frac{1}{4}\%$. Bombay Exchange closes at $1s\ 3\frac{1}{2}d$. Brazil Exchange $7\frac{1}{2}d$. Rupee paper $3\frac{1}{2}\%$. $62\frac{1}{2}$. Silver 25d per oz.

The moderate supply brought forward in auction met with a good demand, and prices for all descriptions, except the commonest, shew a slight improvement, fine qualities especially realizing full rates. Brazil markets remain steady.

The sales included:—13 casks and tierces 26 barrels and bags Plantation Ceylon sold at 94s to 111s; of 372 bags East India. 357 bags Neilgherry sold from 65s to 104s 6d, and 15 bags cherry Wynaad from 57s to 63s; 89 barrels 38 bags Jamaica chiefly sold at 53s to 90s; 125 bags Costa Rica small part sold at 50s; 1,676 bags Guatemala sold from 55s to 93s; 426 bags Salvador sold at 60s to 62s 6d; 647 bags Nicaragua chiefly sold at 51s 6d to 54s 6d; 910 bags Mexican chiefly sold from 44s 6d to 70s; 55 bags Vera Paz part sold at 70s 6d to 71s; 3,185 bags Columbian obiefly sold from 46s to 101s; 150 bags Guayaquil bought in; 38 bags Bolivian bought in; 93 bags Venezuelan bought in; 113 bags Peruvian bought in; 766 bags Nyasaland sold from 60s to 107s 6d; 14 bags East India Liberian bought in, and 829 bags Santos on quay terms, part without reserve, sold from 34s to 35s.

Daily receipts in Brazil have averaged 17,143 bags in Rio, and 31,571 bags in Santos.

Futures have been quiet during the past week, and in the absence of further unfavourable news regarding the new crop, quotations have slowly declined, and close quiet at a decline of 1s to 1s 3d, viz.:—Good average Santos in Havre, December delivery, fcs. 42.50, in Hamburg pf. 35 $\frac{1}{2}$, and No. 7 low ordinary Rio in New York \$6.50.

To-day's London official quotations are:—

	Oct.	Dec.	March	May	July.
RIO	...	32/6	...	...	...
SANTOS	...	33/9	34/3	34/9	35/3

We quote:—

Ceylon, mid. to good mid.	102/ @106/	Costa Rica, mid. to fine...	84/ @110/
Do. small to low mid.	80/ „ 101/	Do. ord. to low middling.	62/ „ 83/
East India, mid. to good	...	Jamaica, good to fine ord.	53/ „ 70/
Do. mid ..	90/ „ 103/	Do. greenish to fine	...
Do. small to low mid.	72/ „ 89/	Do. colory...	75/ „ 125/
Guatemala, mid. to fine...	83/ „ 106/	African	30/ „ 33/
Do. good ord. to low	...	Columbian, ordinary	47/ „ 53/
Do. mid...	62/ „ 82/	Do. good ord. to	...
Salvador, good ord. foxy	...	Do. low mid...	55/ „ 83/
greenish...	57/ „ 58/	Do. mid. to fine...	84/ „ 105/

Receipts in Brazil compare as follows with previous years:—

	1897-98.	1896-97.	*1895-96.
	Bags.	Bags.	Bags.
RIO	1,420,000	1,080,000	777,000
SANTOS	2,507,000	1,795,000	1,169,000
	3,927,000	2,875,000	1,946,000

NEILGHERRY.

	F	A	B	C	PB	T
Patycumbay	...	102/6	91/6	76/-	108/-	59/-
Kotergherry	...	...	...	bid	...	...
KC	...	104/6	94/-	76/6	105/-	63/6
Davamullay	102/-	102/-	91/6	80/-	104/6	59/6
Landed last week	368 tons.	Deliveries	720 tons.	Stock	11,774 tons.	
Do. last year	297 „	„	676 „	„	9,030 „	

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report dated October 1st, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	386,971 packages.	463,039 packages.	15,795 packages.
1896-1897...	392,096 „	402,910 „	17,428 „
48,749 pkgs. INDIAN	Total 65,305 packages were offered in public auction this week.		
15,428 „ CEYLON			
1,128 „ JAVA			

Under the influence of a steady business in the country, anticipate shorter supplies from India, and smaller quantities expected to arrive from Ceylon during the next few weeks, buyers generally have taken decidedly more cheerful view of the situation and appear inclined to operate with more confidence. The very cheap prices lately ruling for nearly all descriptions of Tea appear to warrant them in purchasing somewhat more freely so long as such good value can be obtained as possible at the present time.

Indian. Sales were rather in excess of last week and comprised 48,749 packages against 47,360; prices for all grades were very steady, good and useful liquoring descriptions being specially in demand. The following avgs. are worthy of note:—“Assam C Cherideo,” $1/5\frac{1}{2}$; “Poobong,” $1/4$; “Budla Beta T Co Budla Beta,” $1/4d$; “Mim T Co,” $1/3d$; “Amal T Co Dooteriah,” $1/2\frac{1}{2}$.

Week's av. of Tea sold on Garden Account, 1897, 39,033 pkgs. av. $9\frac{1}{2}d$. 1896, 37,368 pkgs., av. $9\frac{1}{2}d$.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	21,103 p 10 $\frac{1}{2}$	19,924 p 10 $\frac{1}{2}$	146,375 p 11 $\frac{1}{2}$	125,272 p 11 $\frac{1}{2}$
Cachar and Sylhet.	8,229 p 7 $\frac{1}{2}$	7,028 p 8	65,481 p 6 $\frac{1}{2}$	62,038 p 7
Chittagong	212 p 7	115 p 7 $\frac{1}{2}$	1,344 p 6 $\frac{1}{2}$	667 p 6
Chota Nagpore	...	...	356 p 5	402 p 6
Darjeeling	2,326 p 11 $\frac{1}{2}$	2,794 p 10 $\frac{1}{2}$	25,692 p 11 $\frac{1}{2}$	24,355 p 11 $\frac{1}{2}$
Doors	5,763 p 7 $\frac{1}{2}$	5,579 p 8	35,261 p 7 $\frac{1}{2}$	33,443 p 7
Kangra, &c.	115 $\frac{1}{2}$ c 8 $\frac{1}{2}$	399 p 6 $\frac{1}{2}$	2,881 p 7 $\frac{1}{2}$	796 p 6
Neilgherry	218 p 7	20 p 6 $\frac{1}{2}$	2,174 p 7	910 p 7
Teral	1,067 p 7	462 p 7 $\frac{1}{2}$	7,371 p 7 $\frac{1}{2}$	3,176 p 7
Travancore	...	1,047 p 6 $\frac{1}{2}$	2,217 p 6 $\frac{1}{2}$	9,398 p 7

Total sold on Garden Account 1st June to date 1897, 274,093 pkgs., av. $9\frac{1}{2}d$. 1896, 262,034 pkgs., av. $9\frac{1}{2}d$.

SUPPLEMENT TO "PLANTING OPINION."

Comparative prices of Indian Tea in London :—

		1897.	1896.	1895.	1894.
DUST.	(Fair ordinary, dark liquor)	... 3½d	4½d	5d	3½d
FANNINGS.	(Red to brown, strong rough liquor)	... 4d	5½d	5½d	4½d
BROKEN TEA.	(Brownish to blackish, strong liquor)	... 6d	7½d	6½d	6½d
PEK. SOUG.	(Blackish greyish, useful liquor).	6½d	7½d	7½d	7d
PEKOE.	(Greyish to blackish, some tip, useful liquor).	... 8½d	9d	8½d	8½d
PEK. SOUG.	(Blackish greyish, inferior liquor).	4½d	5½d	6½d	5d
PEKOE.	(Blackish greyish, some tip, inferior liquor)	... 5½d	6d	7d	6½d

Ceylon. The week's offerings were very small and comprised only 15,428 packages against 20,194 packages. Quantity continues, as generally happens at this time of the year, to show an improvement and many of the Teas now arriving have very attractive liquors. Competition for all grades was keen and a rise of ¼d. to ½d. was noticeable in all medium kinds, while a rather more perceptible advance must be quoted in Teas of the higher grade. Teas for price were also here and there ¼d. dearer. The following averages may be mentioned:—"Brookside," 1/2½; "Newera Eliya TCo. Excelsior" and "Concordia," 1/2½ and 1/2¼ respectively, and "ST Co. St. Leonards," 1/2¼; "Holmwood," "Campion" and "Portmore TCo. Portmore," 1/0¾.

Average for week slightly over 8½d., against 9d. for same time last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 858,028 pkgs., av. 7½d. 1896, 760,669 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London :—

		1897.	1896.	1895.	1894
PEKOE SOUG.	(Ordinary leaf; fair liquor)	... 6½d	6½d	7½d	6½d
PEKOE	(Ordinary leaf, little twist; fair liquor)	... 7½d	8½d	8½d	8½d
PEKOE SOUG.	(Rather bold leaf; indifferent liquor)	... 5½d	5½d	6½d	5½d
PEKOE	(Somewhat bold leaf; indifferent liquor)	... 6d	6½d	7½d	6½d

Java. The offerings this week were, generally speaking, of an attractive character. Good invoices from "Perhawatee" and "Goalapara" were brought forward while "Panoembangan" was also represented by some very fair Teas grown from Assam seed. A small parcel of Flowery Pekoe in boxes from the "Nangoeng Estate" realised 2/6½d. per lb. The market for all descriptions was very strong and prices showed an advance of ¼d. to ½d. per lb. on rates ruling a short time back. A few Teas of indirect import were included in the auctions. Catalogues for 629 packages are advertised for sale next week.

Bank rate 2½ per cent. Exchange on London three months sight.—Calcutta 1/3½½, Colombo 1/3½½.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9½d.) October 1st.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe,		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	218 p	7	...	...	...	...	...	...	87½c	5½ 6	...	...	...	...
C	87½c	6	...	...	...	...	...	...	...	...	5½c	5½	...	...
Glenburnie	18½c	7½	7½c	10	6½c	6½	...	...	...	...	31	6	9½c	7½
Kodanaad	113 p	7½	...	...	12	7½	42½c	9½	19	7½	...	...	...	...

JOHN TANN'S
"ANCHOR RELIANCE"
 FIRE-RESISTING

SAFES!
SAFES!!

The bodies of these SAFES are made of best STEEL PLATES, bent solid at corners, the chambers are 3 inches thick, and are charged with J. TANN'S Patent Steam-generating Fire-resisting Non-corrosive composition.

The DOORS are Solid Steel Plates, $\frac{1}{2}$ inch thick, and the Bolts are secured by J. TANN'S improved

SIX-LEVER LOCK

Which is protected by drill-proof UNBREAKABLE Plate.

QUALITY taken into CONSIDERATION, these are the CHEAPEST SAFES ever offered, as it is only by lessening the cost of Production by the use of Special Machinery and the Manufacture of Large Quantities at one time that they can be sold at the following

LOW PRICES:

- No. 99.—Outside measurement:—20 inches high, 16 inches wide, 16 inches deep, 8 inches clear depth inside, approximate weight, 2cwt., 1qr., 14lbs., Rs. 130.
- No. 100.—Same size as No. 99, but with LOCK DRAWER inside, Rs. 146.
- No. 101.—Outside measurement:—25 inches high, 19 inches wide, 19 inches deep, 11 inches clear depth inside, approximate weight, $3\frac{1}{2}$ cwt., Rs. 146.
- No. 102.—Same size as No. 101, with LOCK DRAWER inside, Rs. 156.
- No. 103.—Same size as No. 101, with LOCK DRAWER and PARTITION, Rs. 165.
- No. 36.—FIRE and FALL-RESISTING Commercial Safe. Outside measurement:—24 inches high, 18 inches wide, 18 inches deep, $9\frac{1}{2}$ inches clear depth inside, approximate weight, 3 cwt., fitted with SHELF, Rs. 186.
- No. 37.—Same size as No. 36, with LOCK DRAWER, Rs. 196.
- No. 41.—FIRE and FALL-RESISTING Commercial Safe. Outside measurement:—27 inches high, 21 inches wide, 21 inches deep, clear depth inside, $12\frac{1}{2}$ inches, with LOCK DRAWER and PARTITION, Rs. 235.

ADDISON & CO., MADRAS.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, OCTOBER 30, 1897.

[No. 31.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 5th November 1897.

SEASON REPORTS.

S. E. Wynaad. PUNDALUR, 27th October.—*Weather.*—Since my last report we have had bright sunshine and cloudy evenings. On Monday and Tuesday it was cloudy and rain, at intervals a little sunshine. To-day the sun shines again brightly. *Crops.*—The ryots are harvesting ragi and the coffee ripening. *Health.*—Good. *Grains.*—Rice 7, salt 7, ragi 19, and cholam 19 measures per rupee. *Labour.*—Sufficient.

Nilgiris. COONOR, 27th October.—The long break in the N.-E. seemed to break up on 26th, when we had some heavy rain. Sunny weather again now, with cold snap in air. Expect heavy November rains. Coffee ripening up fairly well, but a lot dying back of primaries is noticed all over the district. Consequently a deal of crop will turn to black. This dying back of primaries is present on young coffee as well as bearing trees. Tea doing very well indeed. "Cumbly poochie" visitation almost *non est* compared with go last year. A little sickness among coolies. Labour ample as usual. Coffee turning out very heavy this year. Leaf-disease almost disappeared.

GENERAL NOTES AND ARTICLES.

Profits of Banana meal. In Surinam the profits on this industry are reckoned at fifteen per cent. Very little that we can show in South Indian plantations can beat this.

Coca leaves. We have of late seen little of Ceylon coca leaves in London, says the *Produce World* :—

An experimental parcel sent here in 1885 was valued at 13s. per pound, but the present price is nearer 6d. At one time it looked as though the cultivation was on the increase in the island; the export in 1890, which was 956 pounds, had risen in 1896 to 3,397 pounds.

Camphor. Another new industry, if planters took but the trouble of planting the trees about their estates, would be camphor growing. We learn that the United States Government are trying it in Florida, with encouraging results. The tree appears to thrive at any elevation almost, begins to yield camphor from the leaves in about four years, and can be inter-planted in coffee or tea until its success as a separate culture is assured.

But to stimulate interest in new products amongst South Indian planters is a gigantic task.

Dominica: the Planters' Paradise. Mr. Naftel, Administrator of Dominica and an old Ceylon planter, has recently issued a glowing report on the Island and its capabilities. Its rich soil, good climate, command of labour, and proximity to the English and American markets, Dominica is said to be an ideal planting district for all tropical products. Liberian coffee will flourish exceedingly, and as to tea, Mr. Naftel gets tremendously enthusiastic. Putting the profit per lb. at the liberal figure of 3d., he asserts that the profit per acre should be easily £6-5 to over £12. Happy Administrator, and happier planters!

Recent science. In the last number to hand of the *Journal of the Royal Agricultural Society of England* are two very interesting and suggestive articles on Denitrification and Plant Roots as Soil Tillers, the last named being by Mr. Robert Elliot, the Mysore coffee-planter. The former article, with which we shall deal at length in our next issue, deals with the hitherto little suspected denitrifying organisms contained in farm-yard manure. The results set forth are so startling that, if verified in the field, the use of cattle manure on plantations will probably be much modified. Briefly stated, the harmful denitrifying bacteria in cattle-dung, especially if fresh, not only consume the nitrogen in the dung, but also that of nitrates and other chemical manures if applied in conjunction.

Silt pits in drains. As an addendum to our last notes on draining, we would point out the advisability of silt pits being made at convenient distances in the drains to catch the matter held in suspension in the running water. The size of the pits and their number must vary in proportion to the distance of the drains apart and their gradient. Experiments alone can determine this point. It would be preferable to have the system so carried out that a yearly or bi-yearly cleaning out of the pits

would suffice to keep their utility unimpaired. The pits, by the way, should be dug, of course, in the side and not in the down drains. It would also lighten the work, and consequently the expense of replacing the silt as near as may be *in situ*, to have numerous and shallow pits, rather than infrequent and large ones.

Chemical grocers. There is little chance that food-products will ever be bought and sold on their chemical analysis, desirable as this may be in many instances. The consumer uses no test tube in his tea-cup, the palate is still good enough for him. The London *Grocer*, however, has an idea that the commercial value of coffee and tea depend on the percentages they contain of caffeine, and theine and gives its readers directions for simple analysis thereof. This is a false assumption. The commercial value chiefly depends on taste and appearance, with neither of which the above alkaloids have any relation. Caffeine and their percentages are very constant, and chemical analysis is consequently of little, if any, use. The flavour in both cases is due to the presence of volatile essential oils, tempered by the gummy bodies that thicken the liquor and by the tannin that gives it its piquant pungency.

Famine Fund Misappropriation.

Thus speaks *Truth* in a recent article on "Indian" affairs :—
Nobody is likely to question the general accuracy of Lord George Hamilton's statement in his letter to the Lord Mayor that the Indian Famine Fund has done immense good in the relief of suffering and distress. At the same time it is to be feared that the administration of the fund has not been wholly free from abuses, and a peculiarly gross instance of the misapplication of the money has been given in *Planting Opinion*, a Madras journal. Being in want of labour, a planter from a Native State endeavoured to recruit it in the famine district in the Madras Presidency. Some eighty coolies offered to enter his employ, and were conveyed by train at his expense from Adoni to Koilpati. There, however, all but about a dozen flatly refused to proceed to the estate for which they had been engaged, and as the planter came from a Native State, the law gave him no redress against the deserters. The latter were offered other work, but they declined to do anything whatever, and finally their expenses back to Adoni, amounting to nearly ten rupees a head, were paid by the Government out of the Famine Fund. It does not appear that there was anything objectionable or irregular in the recruiting of coolies, or that they had any reason, except an indisposition to work, for refusing to carry out their contract. But whatever the merits of the dispute between the coolies and the planter, it was certainly not a case for relief from the Famine Fund. If it was the duty of Government to send men back to their own district, it was the duty of Government to pay the expenses. Most assuredly it was not for any such purpose that the Famine Fund was raised.

The opening of the mints.

Now that the Home Government, on the representations of the Indian Government, has declined to urge the re-opening of the mints, it is time that the great producing classes of the Indian Empire should take steps to present their view of the question to Parliament. As the most educated and influential section of producers, the planting communities should take the lead in the movement, and, if possible, join hands with their *confrères* in Ceylon and the Straits, to obtain a universally-signed memorial stating their position. There is no need for financial genius to grasp the fact that Indian and other rupee producers are being subjected to a most inequitable indirect tax. It is a plain and matter-of-fact question that a planter or ryot must get less rupees for his tea, coffee or grain, if the exchange is

forced up to 1s. 4d. than he would if it was allowed to sink to, say, 10d. It is even more serious than this. Grain and tea compete largely with silver-countries, and the dishonest rupee results in a huge bonus to their rivals. We stated some time ago how the consequent loss on home charges could be easily recouped by the Indian Government by a small direct export tax, and we are glad to see this view taken up in Ceylon. The *Observer* suggests that Ceylon should lead the way in the matter of the memorial. If it does, we sincerely trust that the movement will be enthusiastically supported in India.

Guaranteed artificial manures.

A leading Nilgiri planter writes us from home on this important subject. We have frequently expressed identical views:—

"I enclose a cutting from the *Times* which I think may interest readers of *Planting Opinion* as showing the severity with which vendors of adulterated artificial manures are treated in England. Though not doubting for a moment the integrity of our Agents and Merchants, would it not be to their advantage to sell all artificials on the unit value by analysis. With the imported artificials, Superphosphates, Kainits and Sulphate of Ammonia, this is I believe done, but not with the more popular Poonac and Bone different forms of Potash, and in consequence we cannot supply the requirements of our soil as economically as we could if we knew exactly what we were putting out."

INFERIOR MANURE.—At Lichfield, yesterday, Margaret Catherine Ginster, Frank Ginster and Rudolph Ginster, trading as M. C. Ginster and Sons, patent manure manufacturers, Erdington, Birmingham, were charged at the instance of the Staffordshire County Council with breaches of the Fertilizers and Feeding Stuffs Act, 1893, by having failed to supply invoices and details of analysis with two loads of turnip manure purchased by Mr. Nigel C. A. Neville, stipendiary magistrate of Wolverhampton, for use on his farm at Shenstone in June and July last. Mr. Fisher prosecuted on behalf of the county council, and Mr. Vachell appeared for the defence. The manure purchased was advertised to contain fish blood, horn hoofs, flesh, bones, and other animal matter, with a trace of flour, of which some were dissolved and some undissolved, some partly soluble and some unsoluble, because if manufactured all soluble it would be too rich for the first crop, the aim being to grow two crops without the assistance of stable manure. The manure was sold at from £6 10s. to £7 10s., and Mr. Neville purchased two and-a-half tons in June and half a ton in July. Not having been supplied with proper invoices and analysis, and failing to secure satisfactory results from the manure, Mr. Neville sent samples of the last load to Mr. E. W. T. Jones, the county analyst of Staffordshire. That gentleman said the manure consisted of blood and animal matter largely mixed with shoddy, and he pronounced the samples to be rubbish not worth more than £2 to £3 per ton. Mr. Ginster, senior, in reply to a question, admitted that he was bankrupt twelve years ago, and that the business had since been carried on by his wife and sons, with himself actively engaged in the management. He declared that the manure was what it was represented to be in the advertisements. The Bench imposed a penalty of £2 and costs on each of the three members of the firm for each of the two offences, and allowed the county council £15 15s. for special costs. The full penalties and costs amounted to £33 18s.—*London Times*, 23rd October 1897.

CULTIVATION AND MANUFACTURE OF ARROW-ROOT.

[The following notes are contributed by a native gentleman, and will be found of interest as supplementing the information we have already published on the subject.—Ed.]

ARROWROOT is now cultivated in most parts of India, and the starch is greatly appreciated as a nutritive medicinal

food. It is known in Tamil as *Kuva mavoo*, in Hindustani as *Tikhor*, and in Malayalam as *Kuva Nuroo*.

The different species have the same vernacular names, and are grown in Travancore, in Malabar and other districts in Southern India. It belongs to the natural order *Marantaceæ* or *connaceæ*, the arrowroot order, and is a herbaceous plant, closely allied to *Zingiberaceæ* or the ginger order, from which it differs in the absence of aroma. It is a herb with a rhizome, simple sheathing, leaves parallel veins diverging from the midrib, and flowers composed of membranous spathes.

The farina is manufactured in a rough and rude way; attention is not given to the cultivation of the plant to increase the quantity and quality of the starch.

The mode of culture followed by the native producer is to roughly plough up the land and level, then to plant out the rhizomes or root stalks, at about one foot apart either way, before the commencement of the rains, and little or no attention is given them. As a rule manure is seldom used nor are the plants irrigated, except perhaps in exceptional instances; whilst crop after crop is taken off the same soil.

For the proper and scientific culture of arrowroot, care should be taken in the selection of the soil. The soil in which it best luxuriates is a soft, loose sandy soil, or a somewhat porous, loamy one, so as to admit of the rhizomes forming readily and to enlarge to their fullest extent. The land should be well ploughed and freely manured with rotten farm-yard manure, and after being well mixed with the soil, levelled and formed into beds of a convenient size, so as to admit of the plants being irrigated when necessary. The plants should be planted out in lines, two feet apart either way, and when they have attained a height of six inches, they should be ridged or earthed up. The plants should have plenty of room to enable them to form large clusters. For seed we generally prefer the root stalks with their fibrous roots broken up, and the stalks cut short to about four inches in length. The first inch or two of the rhizomes will also answer the purpose of seed, in fact any portion of the rhizome of the size of an inch, containing a joint, will answer the purpose equally as well.

The rhizomes are fit to be taken up in about nine or ten months. They are planted out in the month of March and are taken up from January to March following as best suits the convenience of the cultivator.

The ridges are hoed on either side, and the plants pulled up by the stalks, then having the rhizomes attached, and are handed over to women and children, who remove them from the fibrous roots and stalks and free them of as much of the soil as is possible, and carry them in baskets to the store-room, where they are washed, cleaned, and have the scales peeled off. The white glistening rhizomes are then placed in other baskets to be grated or pounded. Graters are made of perforated tin after the plan of a nutmeg grater, but of much larger dimensions, so as to admit the hand and fore-arm passing through to hold on to the handle at the upper end. The rhizomes are rasped until the whole disappear in the form of pulp; or they are cut into pieces of one or two inches in length, placed in stone or wooden mortars and pounded into pulp. The pulp is then transferred to vessels of clean water in which it is

freely mixed by the hand, any lumps that may exist being broken up. This is allowed to stand to allow the farina settling to the bottom, when the floating fibres are collected and pressed firmly by both hands to squeeze out the fluid which is then thrown into another vessel containing clean water, to undergo a similar process. This operation is repeated three or four times to remove every particle of the farina from the fibres and the resulting white turbid fluid is allowed to stand, after it has been filtered through a clean piece of cloth, to exclude all the fibrous particles. The supernatant fluid is removed either by a syphon or by means of a tin or other pot, fresh water being added to wash the starchy matter that now lies like a paste at the bottom of the vessel; this is well stirred up, strained again and allowed to settle. This process may be had recourse to several times, to render the farina quite clean and pure when the water is drawn off for the last time. The farina or starch is now collected and placed on clean white pieces of cloth, tied up into bundles, easy to handle, and hung up to drain off the moisture. When this is effected, the wet starch is placed on other clean sheets, and placed out in the sun to dry, and when thoroughly dried, the lumps are broken up by hand and the farina is preserved for use.

The average crop of rhizomes produced on an acre of land is 2,500 pounds of corms, yielding 600 pounds of farina (the average is one-fourth the quantity of the corms, but for safety, I have fixed it as 600 pounds), which at four annas the pound will realize Rs.150. The retail price of arrowroot is from 12 annas to one rupee the pound, and, according to an estimate, deducting Rs.50 for cost of cultivation, there is a balance of Rs.100 as the net profit. With care and attention in the cultivation and preparation of arrowroot, the profit will be found to exceed the estimate. The farina if carefully dried can be preserved for use for a long time without spoiling in any way, which is a great advantage.

As famines are likely to occur with greater frequency and severity in the future, I hope our capitalists will try to cultivate the plant to a great extent.

"It is agricultural labour directed by the mind that clothes and feeds a people."

The Wynaad and the Planting Industry of Southern India, by FRANCIS FORD, Re.1,

The Planting Directory of South India, Re.1-8.

Tea Planting from Seed to Cup in Tamil, with English translation. Re.1.

Sketch History of the Planting History of Wynaad, by the late ADOLPHUS ARTHUR WRIGHT. Rs.1-8.

Science and Coffee, by the late MR. WM. PRINGLE, M.S.C.I. Rs.1-8.

Report of Observations of Injurious Insects and common Crop Pests during the year 1883, with methods of Prevention and Remedy, by Miss ELEANOR A. ORMEROD, F.R.Met. Soc., &c., Re.1-8. Apply to

"PLANTING OPINION" OFFICE,

3, ESPLANADE ROW, MADRAS.

LETTERS TO THE EDITOR.

TO PREVENT IRON ROOFS FROM SWEATING.

SIR,—I note honest "Kutchu" has solved his query. But let the next roof he constructs be allowed ventilation to be on either side of the ridging.

If corrugated iron, put a purlin between the sheet under and next to ridge at its *bottom* end between it, and see that it overlaps beside that on ridging. This is to be preferred as the overlap can be made deep and so prevent driving rain from getting through.

BENGAL, }
20th October, 1897. }

"SENEX."

"VISITING AGENT."

SIR,—Some time ago I asked for the definition of the above two words in *P. O.*, but no one has answered. But I think I have found out! viz., "a man with a *good nose*"!! My reason for saying so is:—

A "V. A" was going round an estate the other day (on the roads of course!) and gave it as *his* opinion that there was not much crop on the place; "That HE could '*smell*' a *good crop* without going into the fields and looking into the trees"!!!

Now, as a matter of fact, the said estate is bearing about 7 cwt. an acre all through! I wonder what "a *good crop* smells like"!! if this is *not* one?!!

"KOLA."

Ooty, 21st October 1897.

SAGO PALMS ON PLANTATIONS.

DEAR SIR,—Enclosed is a copy of the latest ruling sprung on us by our benign Government. What do you think of it?

I was under the impression when I bought my land, under the permanent tenure rules, that everything on it, except sandal wood, became mine absolutely, and so those rules certainly seem to make out.

I have a few coffee trees growing on my property, and I suppose in course of time the Government will discover it has some sort of lien on them, and will order me to give its servants free access to them also!!

KADUR DISTRICT, }
North Mysore. }

TWENTY-FIVE-YEAR OLD PLANTER.

The copy of rules only received by me on 20th instant.

Bagni (sago palms) trees.

MEMORANDUM.

No. 215-19.

The following instructions are issued to the amildars and supervisors for making preliminary arrangements for the settlement of the Bagni toddy farms. The dates on which the Excise Deputy Commissioner will visit several taluqs have already been notified in *Gazette* for public information

As the Bagni trees are mostly situated on the property of coffee planters, they will be at liberty to dispose of them to the lessees, under such private arrangements as may be arrived at between themselves, but the lessee will be bound to pay Government tree tax at the prescribed rate and get the trees duly marked by the excise officers before drawing toddy therefrom.

Proprietors of coffee gardens will in virtue of the grant be allowed to tap free of tax five trees per annum for the making of bread, or any other *bona fide* domestic purpose. Such trees should be duly marked by the excise officers and a license obtained therefor from the Deputy Commissioner or such other officer as may be appointed for the purpose.

They will be further required to allow free access to their estates without reservation to the excise officers for marking and inspecting

the trees, and to see that the license rules are not infringed. Any abuse of the privilege will not only entail prosecution but cancellation of license granted to them.

Signed) W. WINCOMBE DAVEY.

18th May, 1897.

EXCHANGE: CHINA SENDING TEA TO INDIA.

SIR,—In an extract you give in *P. O.* of 16th October of remarks by Mr. Forbes Mitchell, that gentleman in connection with the present anomalous position of the rupee anticipates that China will ere long be importing tea to Calcutta. It has been already done, but whether the result of the inflated rupee is not stated. Here is an extract from Sir Claude Macdonald's report on China trade to Lord Salisbury, taken from the *London Times* :—

"India, while destroying Indian black tea trade with England, is herself taking more and more Chinese tea. In 1887 China sent a little over two millions of fine teas (mostly green) to India. Last year, in spite of plague and famine, the amount reached 6½ millions."

Mr. Mitchell's remarks are very pertinent as bearing on the Exchange question, but he deals with the matter from the producer's point of view, and it is this that is now coming into prominence. Before it was the remitter's, now it is the drawer's turn to complain. But the fact is that the whole thing is out of joint, and not until Gold and Silver currencies are bonded together by a fixed ratio will there be any satisfactory settlement of the question. This is the doctrine Bimetallists have been preaching for many years to what seems a stiff-necked and blindfolded generation. Will it have to be burnt into them with the red hot irons of fruitless toil, ruined industries and general disaster?

UNITED WE STAND.

COFFEE.

Loquat shade.

Shade in Nyassaland is beginning to be recognized as a necessity, but the choice of suitable trees is proving a great puzzle. One man recommends loquat as being very dense (a scarcely desirable quality) and affording lots of fruit to the labourer.

Shipping parchment.

A planter on tour on the Continent writes us that he was informed by a Hamburg coffee merchant that the amount of coffee shipped in the parchment was increasing every year, as it was found to retain its colour so much better. The same informant added that although Brazil crops would be as large as ever, it would not—as we have frequently assured our readers—affect prices for East Indian marks.

A new use for pulp.

We learn from a contemporary that orders are occasionally received at Colombo from the Persian Gulf ports and Aden for coffee husk, the refuse thrown away after pulping the coffee. It appears that the natives there boil the husk, and use it as a kind of tea or make a preparation and mix it with real coffee. The husk of Liberian coffee is preferred to that of either plantation or native cherry.

Ceylon on Nilgiri Coffee.

One of the recent visitors to the Nilgiris is Mr. Parr, a well-known Ceylon planter and sportsman. In

an interview published in an Island paper, Mr. Parr, after enthusiastic praise of Nilgiri sport, thus expresses his opinion on Nilgiri Coffee :—

I went round some tea estates and coffee estates and was very much struck with the coffee. It is very fine Arabian Coffee, and they cultivate very highly. I should say they understand coffee better than we did; at any rate they realise it is worth taking care of, which I am afraid we did not. The estates are very isolated. You go through a lot of jungle before you find another, but all you see of coffee you are rather astonished at and pleased with; you feel it is good, strong and healthy, and signs of leaf-disease are not particularly apparent; you can see a few leaves on the ground, but not very much.

Brazil plantations.

There are indeed huge estates in the "ten million bag country." The largest coffee estate in that country comprises 110,000 acres, of which 13,000 are planted with coffee, and 20,000 more are suitable for coffee trees. It was sold for \$5,838,000. The trees in bearing rose from 1,300,000 in 1892 to 2,096,500 in 1895. The profit in 1895 was \$637,000; the estimate profit for 1896 is set at \$711,000. The total number of trees in this plantation was, in June 1896, 4,426,604, of various ages, and it is estimated that two-thirds of the trees being new, from 1897 onwards, an average harvest of 100,000 bags (13,200,000 pounds) may be expected, and that, in three or four years, the yield may increase to 250,000 bags or about 32,500,000 pounds per annum. The next largest estate is of 9,785 acres, with 1,800,000 trees, populated by nine colonies with 260 families, furnishing some 1,500 labourers. There are several other plantations on which grow more than 1,000,000 coffee trees.

The Market.

There has been a very considerable falling off in the supplies brought to auction, and even the small quantity offered has consisted mostly of undesirable parcels, says the *P. M. Review* of 2nd October. With the exception of a few parcels of Guatemala, little has been offered by the importers beyond Colombian, and these have been, like the greater part of this growth, so mixed with bad berries that, so far as the home trade is concerned, very little attention is paid to them. It is a pity that more care is not bestowed upon the preparation for market of this growth, as much of the coffee is of fine quality and would often fetch 10s. to 15s. more money if only it had been more carefully picked. In the terminal market, no fresh news having been received as to the next crop, the continued heavy receipts have

COFFEE SHADE TREE.

Sun-dried *Erythrina lithosperma* loppings, &c., contain per ton :—

61.50 lbs. of Nitrogen, 57.38 lbs. of Potash, 14.92 lbs. of Lime, and 13.68 lbs. of Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of the above analysis at Rs. 6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE, SHENCOTTAH.

again had a depressing effect upon prices, and quotations are about 9d. per cwt. lower. The total receipts in Rio and Santos for the first three months of this crop, that is to the end of September, amount to rather over 4,000,000 bags, so that it is hard to believe that the crop will not turn out even heavier than last year's, which was the largest on record.

TEA.

West Indies. It is reported that Dominica offers excellent prospects to tea-planters. We sincerely trust that the West Indian planters will be able to hit upon some product other than tea to replace their ruined sugar-industry. •

Tea in the Caucasus. Reports from Odessa, says the *H. and C. Mail*, state that the new tea plantations at Chakia, in the Osurgentski Government, on the Caucasus, have given most excellent results, and encouraged their proprietors to engage a number of Chinese experts to instruct the natives in all the intricacies of tea-growing. The last tea crop is stated to have yielded $\frac{1}{4}$ lb. of tea for every bush planted, or 1,500 lb. from an acre having 6,000 tea plants on it, which sounds quite incredible. The whole available area for tea-growing is 20,000 acres, therefore the total yield could, on these figures, with ease be brought up to nearly 30,000,000 lb., which represents more than half of the annual consumption of the tea imported into Russia. This news is not gratifying to those who expect an expansion of the Ceylon tea trade with Russia, but it is no doubt unduly sanguine in its estimate of future results.

A New Mixture.

Adulterated tea is played out in these markets, writes a Home paper. The rise of the Indian and Ceylon tea industries practically put an end to the art of doctoring tea leaves. On the Continent the game still flourishes, and a preparation of adulterated tea-leaves is described in a German medical paper. This preparation has long been known in Russia, where it is sold under the name of "rogogeski." It is made in the following way:—"The manufacturers of this adulterate buy in the tea houses the residue of the teapots—leaves which have already been used—and mix these leaves while still moist with other leaves and very little genuine tea. The mixture is heated with an addition of extract of caramel and campeche wood, in order to improve the colour and the taste. The weight is also increased by the addition of sand or soil, and just before being dried the leaves are rolled between the hands. The adulteration is so difficult to recognise that a chemical test is necessary to prove it. If tea prepared in this way is dipped into a cold saturated solution of copper, the blue colour of the solution will not be changed, not even if the adulterated tea is allowed to remain in it for three or four months."

The Market.

INDIANS.—The revised statistics of the crop and reports of unfavourable weather in most of the tea districts have imparted a firm tone to the market, says the *P. M. Review* of 2nd October. It now appears probable that the exports from Calcutta will fall considerably short of the early estimate, as the

production of most of the gardens is behind that of last season, and it is generally expected that the quantities available for this market will not be in excess of last year. It is, however, too early to forecast with any degree of accuracy what the actual outturn will be, and the difficulty of doing so was shown last season when the first estimate was reduced materially at about this period, though eventually the quantity produced was considerably larger than the earlier anticipations. In any case there is no reason why an important advance in prices should be established, as it must be remembered there was a surplus of 5,000,000 lbs. in the stock at the end of last season, which, of course, has been materially reduced in the later months, but at the end of August the quantities were still about 3,000,000 lbs. heavier than in the same month in 1896. This, coupled with a larger stock of Ceylon by upwards of 2,000,000 lbs. should, and no doubt will, check any tendency towards an advance in values, as, with the heavy imports now coming forward, supplies will be ample to meet any reasonable increase in the consumption. At the public sales 48,749 packages were brought forward, 5,052 of which were withdrawn. There was good competition at firm and in some cases advanced rates, the common grades with clean good infusion were readily taken at slightly higher prices, while quite former values were obtained for the better sorts.

TEA MANUFACTURE BY ELECTRICITY.

THOUGH perhaps inapplicable to the great majority of South Indian gardens, yet there is little doubt that far too little advantage has been taken up to the present of the extraordinarily economical power of transmission of energy by electricity. So we trust that the following extract from the *Indian and Eastern Engineer* will secure the attention it merits:—

Mr. Davidson Rickie, Electrical Engineer to the British Darjeeling Tea Co., Ltd., has successfully introduced electricity as a motive power for the manufacture of tea, which has been successfully at work since the beginning of 1896.

Mr. Rickie is also the patentee of a process for the complete manufacture of tea without the aid of fuel, where water power is available within reasonable distance from a tea factory. The value of this cannot hardly be over-estimated when one considers the thousands of acres under tea cultivation and the numerous gardens with water power available.

The Thurbo Tea Estate, which covers over 3,000 acres, belongs to the British Darjeeling Tea Co., Ltd., and extends from the Mesh River (one of the Nepal boundaries) to the Rungbong River, which flows through the Nagri Valley. The tea factory is situated one mile from the Rungbong River at an elevation of 4,000 feet: all the machinery is worked by electricity. The water taken from the Rungbong River is led by a substantial waterway of masonry to a point where a fall of 56 feet is obtained; from this point 16-inch steel pipes convey the water, down the 56 feet fall, to a 40 H.P. Jonval Turbine (this being one of the best low-water fall horizontal turbines by Mr. William Gunter).

To this turbine is connected, by belt and pulley, a Messrs. Mather and Platt's Patent Manchester Dynamo capable of generating 30 H.P. indicating 320 volts and 70 amperes. The current of electricity is transmitted by overhead copper wires to the factory; the terminals being connected to a Manchester motor, patented by Messrs. Mather and Platt, and capable of developing 24 B. H.P. The motor is under complete control, and the speed is regulated by a graduated 10-stop switch; it is also supplied with drop sight of cups and Messrs. Mather and Platt's patent carbon brushes, so that practically speaking, it requires no attention.

The machinery driven by the above electric plant comprises—

Large Davidson Down Draft Sirocco tea driers, 2 Jackson's Patent tea-leaf rollers; 1 Davidson-MacGuire tea packer; 2 Tea sifters; 1 Tea cutter. It also provides for the lighting of the factory throughout by electricity with numerous 16 C.P. incandescent lamps which are hung from the ceilings and give a brilliant light. The electric lighting of the factory is effected by joining the positive and negative wires for the electric light to the positive and negative wires between dynamo and motor, the current being regulated by a small resistance box.

The entire confidence which the British Darjeeling Tea Co. place in Mr. Rickie's abilities, and the reliance they place in electricity as a motive power of tea manufacture, is proved by the fact that there is no reserve power at hand in the event of a breakdown; and no doubt can be entertained of the success of the above plant, seeing that such satisfactory results have been obtained, and it is now well through the second season, with no sign of any trouble or stoppage.

We will proceed to enumerate the many advantages to be derived from electricity, as a motive power, for tea manufacture. Firstly, we must consider that most serious question of fuel.

It certainly seems almost incredible that those who are striving daily to reduce expenditure, and study economy, on a tea garden, cannot see that they are throwing away a large percentage of the profits in smoke; whereas, by utilizing this water power and adopting electricity, a great economy could usually be obtained.

What are the advantages derived from steam power? Coal or wood is absolutely necessary. There is the constant fear to the manager of a tea garden that the native driver may allow the water to run low in the boiler. The fires must be lit at a certain hour to be ready for withered leaf, and after steam is raised and the leaf is not quite ready, the fires have to be kept back. The boiler has to be cleaned out occasionally and scaled, which incurs the cost of packing, jointing, etc. The yearly overhaul to machinery, viz., steam engine and boiler. The dirt and dust resulting from the use of fuel. These are all disadvantages, and the only advantage steam can claim over electricity is that it does not require so large a supply of water. In all other respects, electricity proves to be superior. It is the acme of cleanliness as a motive power. It can be started and stopped at any moment, night or day, at a moment's notice. It will run for years without requiring any repairs. It is more economical than any other power excepting the water-wheel.

There is the great advantage of lighting the factory by electricity, and most of the disadvantages, arising from the use of steam power, are obviated.

The Superintendent can command the electricity at any moment, as he has only to ring an electric bell, and the man in charge, at the turbine house, turns on the water by opening a sluice door, and in 2 to 3 minutes all the machinery in the factory is in motion. There is no necessity to order more or less power, as the ammeter indicates what machine is at work by the resistance indicated thereon, and the voltmeter indicates the speed by the number of volts. No danger can arise from too great a pressure, as a safety fuse would immediately melt and cut off the current, or, in other words, break the circuit; but this seldom, if ever, occurs, and in the event of it occurring, a fresh fuse is always at hand, which can be replaced in half a minute.

We learn that Mr. Rickie is now making arrangements for testing his patent on a large scale; and should he prove successful it will create a revolution in tea manufacture, and it can only be a question of time for the general adoption of electricity.

Another decided advantage of electrical plants is the ease with which they can be carried. A dynamo or motor can be taken in parts and the heaviest of these can be carried by eight hill coolies to the most inaccessible tea gardens in the hills; whereas it would take days of labour and anxiety, with hundreds of coolies, to drag a steam boiler and engine. As a matter of fact, it has been found to be quite impracticable in some of the hill gardens. We would impress on all interested in tea, who decide to adopt electricity as a motive power, the necessity of having the plant erected, and fitted up, at the outset by a thorough, practical engineer, as the secret of success is that electrical plants must be thoroughly put together, and if this is done they will run for years without giving any trouble.

Many who are not conversant with electricity have an idea that it is a dangerous power; that is a great mistake, as the only danger lies in touching the exposed parts which are charged with electricity, and there is no reason or necessity for doing so; but even should this occur, the only result would be a severe shock, as the power required

for a tea garden would not be sufficiently strong to cause any serious accident. It has been very amusing to read in the local papers articles headed "The Dangers of Electricity;" the writers of these articles appear to forget that accidents due to electricity are few and far between, whereas accidents from steam are of frequent occurrence, we may say almost daily.

DISTRICT ASSOCIATIONS.

COORG.

PROCEEDINGS of a General Meeting of the Coorg Planters' Association held at the Bamboo Club, Pollibetta, on Tuesday, 14th September 1897. Present: Messrs. W. Davies, J. W. Finlayson, F. W. Gerrard, H. G. Grant, A. H. Jackson, R. Kaundinya, John Logan, H. T. Shaw, and H. G. Parsons, *Honorary Secretary*. Mr. John Logan in the Chair.

U.P.A.S.I.—The Honorary Secretary read letter from the Chairman, U.P.A., to the Government of Madras with reference to the Report of the Committee of Enquiry, and gave a short history of the business conducted at the meeting of the U.P.A. held in August at Bangalore and the action taken by the delegates of the Coorg Planters' Association on the different questions. Mr. W. Davies, in a few well-chosen words, proposed a vote of thanks to the delegates for their services, and was gratified to see that the Vice-Chairman of the U.P.A. was a Coorg member.

Agricultural Chemist.—After some discussion and hearing what had taken place at the U.P.A. Meeting, Bangalore, it was resolved that it would be futile to circulate a subscription list in Coorg; however, the Honorary Secretary said he would be pleased to open an account and receive subscriptions from those disposed to support the object of engaging an Agricultural Chemist by the U.P.A.

Railway.—Resolved that this Association views with satisfaction the investigation into the question of Railway Extension from Mysore to Hunsur.

District Magistrate.—Resolved that the Honorary Secretary write to the District Magistrate asking him to kindly send round notices when coming on circuit to Veerajapett and Pollibetta.

Mr. Shaw pointed out the inconvenience occasioned owing to there being no one at the time in the Gedenalkaad Taluq with powers to grant warrants under Act XIII. of 1859. *Recorded.*

A printed Agreement form for advance under Act XIII., adopted by the Wynaad P.A., was examined, and it was resolved that a printed copy be sent to each member of the U. P. A.

Proposed by the Honorary Secretary, seconded by the Chairman, that Mr. G. C. Garrett be elected a member. *Carried nem. con.*

The following papers were laid on the table:—

General Meeting, Shevaroy Planters' Association, July 1897.

Wynaad Planters' Association, June and July 1897.

Lower Pulneys' Association, March 1897.

Central Travancore Association, July 1897.

Nilgiri Planters' Association, July 1897.

Water Lifts, Bulletin No. 35.

Photos of Casket to the Queen-Empress from U.P.A.S.I.

With a vote of thanks to the chair, the meeting ended.

JOHN LOGAN, *Chairman*.

H. G. PARSONS, *Hony. Secretary*.

N.B.—Next meeting, Mercara, November.

U.P.A. Book of Proceedings for 1897. Now ready. Orders invited. Also a few copies of "Graphic," 12 annas each, with picture of U.P.A.S.I. casket to Queen-Empress.

Honorary Secretary regrets delay in issuing report owing to absence from the district.

CENTRAL TRAVANCORE.

A General Meeting of this Association was held in the Penshurst Bungalow on Saturday, the 16th October, when there were present:

Messrs. F. M. Parker (Chairman), H. W. Baker, R. W. Cole, H. Bissett, H. J. Blandford, R. H. Goldie, H. S. Holder, L. G. Knight, C. Lance, W. H. Leahy, A. E. Veale, Hon'ble

V. B. Wilbraham, C. H. Williams, and G. L. Acworth (Honorary Secretary).

The Minutes of the last Meeting having been taken as read, the Chairman called on the Honorary Secretary for his Report, when Mr. Acworth read as follows:—

MR. CHAIRMAN AND GENTLEMEN,—The proceedings of the U. P. A. S. I. General Meeting at Bangalore were so fully reported in the Press, that I will as usual only glance at one or two of the topics discussed.

The Report of the S. I. P. E. C. was of course the matter of most importance before the meeting and was very fully gone into in Committee. The result of our deliberations was embodied in a letter to the Government of Fort St. George, which letter has since been laid before your Committee.

Finances.—It was decided that the method of raising funds should be that which had already received your approval and which you instructed us to support. To become a member of the Head Association no District Association may subscribe less than one anna per acre on a fourth of its cultivated area, whilst the most it can subscribe is one anna per acre on its total area under cultivation. Any Association now has the power to send five delegates to any General Meeting, and the value of the votes has been fixed at one for every Rs.10 subscribed. I conclude this Association will take the full number of votes possible, in which event our annual subscription will amount to about Rs.375. I may mention that subscriptions to the U. P. A. are now due, and the sooner the money is paid in the better.

Planting Opinion.—It was resolved that a section of this paper be reserved as our official medium for the publication of circulars and so on. This will save the U. P. A. a considerable expenditure annually, and as one of your chief means of obtaining information as to what the U. P. A. is doing will be through *Planting Opinion*, I would ask you all to give the paper your cordial support.

Closing of the Mints.—This, Mr. Chairman, I consider was one of the most important subjects broached at the meeting, and I most sincerely hope that it will not be allowed to drop. I am heartily glad to see that *Capital*, the leading financial paper in the East, has taken up the question, and in a series of very able articles is giving us and all producers hearty support. You will doubtless have observed that the silver question is again simmering in Europe, and now is the time for us to act. Should we be fortunate enough to secure the co-operation of the other leading producing Associations in the East, we shall be too powerful a body to be ignored. Our claims, in spite of the embarrassments of Government, must be considered. Moreover we are quite prepared to share the burden with others and to assist Government by paying an equitable export duty, or something of that sort. What we do object to is being fined exactly half our income, which was the case some few months since. We are even now paying a tremendous income tax, between 40 and 45% according to the fluctuations of exchange, probably the largest tax extracted from any one body of men in modern times, and it says much for our patience that we have so long submitted to it without a murmur.

Chemical Expert.—The last subject to bring to your notice is the decision arrived at in regard to the employment of experts. I personally cannot claim to be as modest as Mr. Harris, the mover of the resolution, and I think we are none of us quite as ignorant as he dubbed us: at any rate if we are, it is our own fault. However the Mysore delegates made a great point of this question; they know the position of their own affairs best; they have, I am sure, the sympathy of all during their present period of depression, and if they can show they can help themselves, I for one consider them fully entitled to support from a Fund, which they themselves have helped to build up. There was a good deal of difference of opinion as to the benefit likely to accrue from the employment of a chemical expert, but it was most gratifying to note in this instance, and indeed in all questions on which divergent views were held, that delegates were prepared to give way and meet each other. As the Honorary Secretary of the Wynaad Association recently said, "This is a most hopeful sign of future usefulness and the prosperity of the U. P. A. S. I."

To turn to our internal affairs. I should like before laying down my office to notify what has been done during the past nine months, as also to indicate one or two matters that need our attention.

Land Sales.—The Dewan has consented to publish in future the

lowest sum he is prepared to accept for any block of land applied for and to be auctioned.

Title Deeds for lands sold two years since are not yet all issued to the very great inconvenience of the purchasers. I have been assured again and again that they "will shortly be issued," but am now beginning to fully understand what is the "hope deferred which maketh the heart sick."

Telegraph Subsidy.—I hope you will find the call on you in the coming year a far smaller one than has hitherto been the case. To my certain knowledge the wire is much more used than was the case a year since, and in some months I should imagine our guarantee has been very much more than covered.

Government Buildings.—An Engineer was deputed in concert with some of the members of your Committee to view suitable sites to which these buildings might be removed, and a position close to the Pambanar was fixed upon. I have however heard nothing more of the matter, but would urge you not to allow it to drop, the present position of the buildings being not only inconvenient but unhealthy.

Medical Fund.—After a long cross-correspondence, the lines on which were dictated by your Committee, H. H. Government has offered a grant to two out of the four dispensaries already established. It is of course impossible to abolish any one of the dispensaries, four being the very least that are necessary, and it is much to be regretted that so heavy a burden should fall on the Association. The attitude of the Durbar Physician, whom of course the Government consulted, has been far from sympathetic, and he has moreover displayed a singular want of knowledge of the geography of the District.

Revenue Survey.—I had many complaints brought to my notice regarding the action of these officers when engaged early in the year in demarcating our estates. I duly forwarded these on to the Dewan, but was briefly told that the proper person to refer them to was the head of the Department. I therefore allowed the subject to drop, being unwilling to initiate a fruitless correspondence.

Roads and Communications are a subject I am almost afraid to touch upon, so frequent and so reasonable have been our complaints and so small the result. For some months most carters have absolutely declined to proceed to the hills owing to the condition of the roads, and factories in some instances have been blocked with produce which could not be moved. Regarding such chests of tea as were carried during the monsoon, a formal complaint was made to me by Messrs. Aspinwall and Co., and I had the satisfaction of viewing these chests in their godowns. The greater part of them were covered with mud and smeared with cow-dung, the estate marks obliterated, plainly showing that the cartmen had occasionally to unload their carts, draw them empty through such obstructions as there were, carry the chests across by hand, and then reload the cart. I myself have seen this done, and I need hardly say that it spells loss for the planter.

Coomlie Timber Depot, Chotah Para Barrier and Periyar Ferry.—I have been credibly informed that at all these stations blackmail is extorted from cartmen by the local officers. I have begun to investigate the matter, and trust my successor will not lose sight of it. It is we who indirectly pay the blackmail, for of course the rice merchants have to take it into consideration when fixing their prices.

Moondikaim-Kanjerapullay Road Overseer.—I have had many complaints of the high-handed action of this person in forcibly detaining coolies proceeding to estates in these hills brought to my notice. These I have duly forwarded to the Chief Engineer. My last letter was addressed to him on 24th July, and enclosed were formal complaints from the aggrieved parties. I have however received no reply from that officer, and matters reached such a crisis of frequent repetitions of the offence that one gentleman wrote me early in September that he was tired of ineffectual complaining and should another case of crimping occur, he would take the law.

CENTRAL HOTEL,
INFANTRY ROAD, BANGALORE.

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The most comfortable and convenient for visitors.

TERMS MODERATE.

into his own hands. It is probably only some such action as this that will rouse those responsible to the gravity of the situation. It is absurd to suppose we shall tamely submit to the crimping of our coolies by subordinates of the D. P. W. and to the consequent loss of advances.

European First Class Magistrate.—We have now been many months without any such officer, and to this I greatly attribute the trouble we have had with the D. P. W. You will recollect that in April last the acting President, Mr. Nicholson, informed us that the Dewan had assured him that, so soon as opportunity arose, he would appoint a resident first-class European Magistrate. For thirty years this official has been considered necessary here, and one hardly sees the sense of removing him, when the District is almost double the size it used to be, when it is still growing, and when the number of European residents is increasing. It is impossible for the Magistrate at Devikulam to give his attention both to that and this District, and I think a strong representation should be made to H. H. Government that Mr. Vernède, who, it is rumoured, is to be transferred to the Forest Department, be appointed Resident Magistrate in these hills.

Crime in the Periakulam Valley.—This is the last subject I shall bring to your notice, but it is a most serious one. You will all remember that about this time last year, one of our members was dacoited and robbed in this valley. How many dacoities there may have been in the interval I cannot tell, but the valley is notorious for this class of crime, which ought to be stamped out. The last instance I know of I will briefly relate. A Cangany of mine was proceeding to his village to procure coolies with an advance of Rs.200. Another Cangany and two or three coolies accompanied him. At a river crossing in a desolate part of the country the party was set upon, robbed and beaten. The whole of their money was taken, their blankets and all such valuables as they had. Some days later one of the men died of his wounds. The matter directly it was reported to me was put into the hands of the Police and thirteen men were arrested. Eleven of these, all of whom I believe were guilty, were shortly released. Two were retained in custody, and the Inspector of Police at Uttamapaliam himself informed me (I still hold his letter) that these men had confessed their guilt. Personally I do not think much of confessions to the Police, but in this instance my Cangany identified the men, and he tells me he is still prepared to swear to them. Notwithstanding this the Inspector of Police has seen fit to release the culprits without even placing them before a Magistrate. Mr. Chairman, this is a matter that must not be allowed to drop. You must recollect that both we and the Kannan Devan Planters are constantly sending Canganies with large sums through this valley, and the fact that notorious dacoits have got off scot free will be an enormous incentive to an increase of this class of crime. The thing can be checked at once. Every village headman knows, some are said to actually protect the habitual criminals and to share in their gains. Were an extra Police force placed in the valley, and the respective villages made to pay the cost thereof in proportion to their size, dacoity would cease at once. In any event the present condition of the valley reflects but little credit on the responsible authorities. It is intolerable that in the peaceful Madras Presidency one should be unable to proceed unarmed a distance of 50 miles from these hills towards Periakulam, and yet you know well that no one of us sitting here would venture to do so.

Gentlemen, I thank you for your patient hearing, and I now beg to place my resignation in your hands. I very much regret, I regret more than I can tell you, that this is the last meeting of this Association that I shall attend as one of its officers. But, Mr. Chairman, I shall always take the keenest interest in this Association, its welfare and its proceedings, wherever I may chance to be. And I am quite sure that, with such an able body of men as I see before me, and with such gentlemen as yourself and the elder men here present to guide them, this Association will remain what it is, and what it has long been, one of the leading District Associations of S. India.

GRANVILLE L. ACWORTH.

The Chairman, Mr. F. M. Parker, then rose and said that before the

Report was finally adopted he should like to say a few words. It was true that during the monsoon we had had very much trouble with the roads, but he attributed this chiefly to the Chief Engineer's want of experience of the West Coast, and to his idea that the wet weather was the best time for repairing roads. Doubtless he would now alter his views, and that being so, we ought to give the Government a fair show and see what they could do. He had just passed along the whole line himself, and he could vouch for the fact that between Kottayam and the 39th mile the road was better than it had ever before been. Abrupt gradients were being altered, and the repairs to the roads themselves were not mere patchwork; it was practically re-making them altogether. This was most satisfactory, and all we had now to do was to see that things did not slip back into the old groove, but that the present improvements were kept up.

But the most important item in the Honorary Secretary's report and a matter that concerned all producers was the question of exchange. He was much, and had always been much surprised, that when the mints were first closed, no agitation had been started. If we were only the Government of India, how nice and easy it would be for us to legislate, for of course we want a law that is a natural exchange, and means could be found to compensate the remitters. Bankers said that the value of produce would rise with that of exchange, but he thought this absurd, and that it was really the law of supply and demand that caused fluctuations in produce. In any event he was strongly of opinion that all producers should combine for an agitation to restore exchange to its true market value, and Government could easily meet the loss to itself by placing duties on all produce. (Applause.)

The Report was then formally adopted.

Vote of thanks to retiring Honorary Secretary.—Mr. Veale said Mr. Chairman and Gentlemen, it is with great pleasure that I rise to move a most cordial and hearty vote of thanks to Mr. Acworth for his services to this Association. During the past four years this Association has done an immense amount of work, and we are now

CYCLE EXHIBITION.

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St. Mark's Road, South Parade.

CYCLES ON SHOW AND FOR SALE.

MAKE.	Model.	Tyres.	Price net cash.	Gear.	Weight.
GENTLEMEN'S			RS.		lbs.
Ramblers (American).	No. 15	G. & J. pneumatic	400	72	26
Premier	...	S. D. T. pneumatic.	315	66	34
Premier	...	R. Do.	300	74	29
Royal Lagle	...	No. 4 Do.	279	60	34
Scarsdale	...	No. 1 G. & J. pneumatic.	250	60	32
Oakley	...	No. 1 Warwick.	250	60	31
Swift	...	Popular Cushion.	275	60	35
Premier	...	S. Do.	275	63	35
Premier	...	R. Do.	260	66	29
Scarsdale	...	No. 2 Do.	175	56	34
Oakley	...	No. 3 Do.	140	60	35
LADIES'					
Singers	...	de Luxe D. T. pneumatic.	425	56	31
Premier	...	H. Do.	315	56	34
Rudge Whitworth	...	Standard Do.	315	56	32
Oakley	...	No. 1 Cushion.	225	56	31
Scarsdale	...	No. 2 Do.	175	56	34

one of the most prominent Associations in S. India. That we owe our present position largely to the able and energetic manner in which Mr. Acworth has conducted the onerous duties of Honorary Secretary there can, I think, be no doubt. As to the general interest displayed in Association matters by members themselves, Gentlemen, I am sure you have all appreciated the enthusiasm Mr. Acworth has displayed in our own local affairs as well as in those of the U. P. A., and we can have no better proof than in Mr. Acworth we have had a most able and indefatigable Secretary than in his election to the Chairmanship of the U. P. A. last year. Further encomiums on Mr. Acworth's services are unnecessary. I am sure you will all join with me in wishing both Mr. and Mrs. Acworth a most enjoyable visit to England.

Mr. Parker, in seconding the resolution, said that Mr. Veale had left him really nothing to say, but that he cordially endorsed every word that had fallen from his lips. He himself when Honorary Secretary had always looked on the work as a duty, but with Mr. Acworth it had always appeared a real pleasure, so much so that he wondered he could drag himself away from it to go home. He had much pleasure in seconding the resolution. The vote was then carried with acclamation.

Mr. Acworth, in replying, said that he thanked the Chairman and Mr. Veale most heartily for the more than kind terms in which they proposed the vote, and also all the members present for carrying it so cordially. He must, however, ask members to remember that he was not the real artificer of the Association. It was founded many years ago by Mr. Parker, more years perhaps than Mr. Parker would thank him for mentioning. He had merely carried on Mr. Parker's work. It was easy enough to carry on such work; construction was another and a very different matter. He once more cordially thanked the Association in his own and Mrs. Acworth's name for their good wishes.

Periakulam Valley Dacoity Case.—The Honorary Secretary said that he thought it only just to read the last letter from the Superintendent of Police, Madura Division, on this case. Having done so, he continued that his comments on this letter were

(1) That most dacoity cases when related were extraordinary stories. What story could be more extraordinary than the dacoiting of Mr. Garstin, a Member of Council, on this road.

(2) The moment the dacoity was reported to him he passed it on to the Police. It was perfectly natural his Cangany should keep out of the way till sent for. They all knew how much the Police were dreaded and what a poor chance a low caste man had.

(3) Why men should run themselves into danger by confessing dacoity, in order to put the Police off the scent, he was at a loss to conceive. He could not imagine anything more idiotic.

(4) He did not believe for a moment that his "Cangany and the understrappers appropriated the money and invented a cock and bull story." The Cangany had been with him for years, and he had always found him an honest and trustworthy fellow. Moreover at the time of the robbery he owed the Cangany a good deal more than the men, of which the latter was robbed, and the Cangany had no reason to suppose the Rs.200 would not be debited to his account. The estate responsibility in regard to it ceased so soon as he had received the money. Finally the Cangany extremely assured him that he knew the men and was still prepared to identify them, and he believed his word to be as good, if not better, than that of the Police.

Resolved,—That the Planting Member of Council be requested to draw the attention of H. E. the Governor in Council to the chronic state of highway robbery and dacoity in the Cumbum-Periakulam Valley, and respectfully to request that measures be taken to stamp it out.

The Chairman further moved, and it was resolved,

That a copy of this resolution be sent to the Kanan Devan Association with a request that they be good enough to support it.

European Resident First Class Magistrate.—Mr. Veale said: there is a rumour current in the District, and which so far as I have able to learn is generally believed, that on Mr. Maltby's return to Travancore, Mr. Sealy is to be appointed Resident Magistrate at Devikolam. This District is then to be left without a First Class Magistrate. Against this action on the part of Government, I think we should protest. If a European Magistrate has been necessary in these hills for so many years, how much more then is he a necessity now that the District is yearly becoming larger and more populated and is likely to increase still more within the next two or three

years. Why should we, who have for so long been the premier tea-producing district of the State, now be left with only a Second Class Magistrate. A Resident European Magistrate is as necessary here as he is at Devikolam. Both districts are amenable to the same laws and both labour under the same difficulties in respect to run-away and absconding coolies. Mr. Veale then proposed and it was resolved:

That in view of the rumour that this District is to be left without a First-class Magistrate, H. H. Government be respectfully requested to appoint Mr. Vernède to fill that office in these hills in lieu of transferring him to the Forest Department.

Resolved that H. H. Government be requested to abolish the ferry at the Periyar crossing and to reconstruct the bridge at that point.

Closing of the Mints.—Read circular letter from Chairman, U. P. A. S. I., and cordially approved.

At the close of the Meeting, Mr. A. E. Veale was by ballot elected Honorary Secretary.

The following papers were laid on the table:—

Proceedings of the Lower Pulneys Planters' Association.

Do.	do.	Nilgiri	do.	do.
Do.	do.	Shevaroy	do.	do.
Do.	do.	Wynaad	do.	do.

A vote of thanks to the Chairman and late Honorary Secretary, who conducted the business, concluded the meeting.

GRANVILLE L. ACWORTH,

(late) Honorary Secretary,

Central Travancore Planters' Association.

TO STAMP COLLECTORS.

5,00,000 Foreign Stamps, (well-mixed)

Includes some very good varieties. The best offered at the price, which is extremely low.

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„ 2b.	„	250	„	„ 2-8	„
„ 3c.	„	500	„	„ 5-4	„
„ 4d.	„	1,000	„	„ 9-4	„

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General Price Catalogue, contg. prices and particulars of nearly 1,000 SETS OF STAMPS, embracing almost all the countries in the Universe.

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THOMSON'S

ANTI-MALARIAL PILLS,

THE PLANTER'S FRIEND.

The only known Antidote against Malarial Poison.

A sure and efficacious Remedy for Malarial Fever, Enlargements of the Spleen, Malarial Cachexia (Anæmia after Malarial Fever) and other Malarial Symptoms.

A Planter from Assam writes:—

"I have tried Thomson's Anti-Malarial Pills and find them to be most efficacious among my coolies. I can strongly recommend them."

SOLE AGENTS:

COLLINGWOOD & CO.,

EUROPEAN PHARMACISTS,

MOUNT ROAD, MADRAS.

MARKET SUPPLEMENT.

SATURDAY, OCTOBER 30, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (October 8, 1897) says:—The small supplies brought forward in Public Sale met a good demand and values ruled generally in seller's favour.

200 bags East India were offered and mostly sold at unchanged prices.

Central American kinds attracted good competitions, five colory grades of Columbian realising very full rates whilst the commoner qualities sold steadily at about previous values.

The Terminal market after giving way 6d to 9d the earlier part of the week has recovered the decline and closes 3d dearer than last week, the recovery being occasioned by a falling off in Brazil receipts.

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated October 8th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	429,435 packages.	483,406 packages.	10,424 packages.
1896-1897...	446,810 "	425,145 "	17,428 "
42,464 pkgs. INDIAN	Total 63,460 packages were offered in public auction this week.		
20,367 " CEYLON			
629 " JAVA			

Deliveries of Indian and Ceylon Tea from 1st June show sufficient increase to warrant the belief that supply for the season will not be excessive, and that some advance in price may occur.

Indian. All grades sold very freely, slight advances being noticeable here and there; Teas with quality continue in most demand although considerable attention is now being given to those for price. The Official Wire gives exports to U. K. for second half of Sept as 10,900,000 lbs., against 10,340,000 lbs. last year, and the total from 1st April to 30th Sept. as 69,050,000 lbs. against 68,030,000 lbs.

Week's av. of Tea sold on Garden Account, 1897, 32,750 pkgs., av. 8½d. 1896, 36,102 pkgs., av. 9d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	14,678 p 10½	15,728 p 9½	155,678 p 11½	141,000 p 10½
Cachar and Sylhet.	8,682 p 7	9,172 p 7½	73,163 p 6½	71,210 p 7½
Chittagong	—	—	1,344 p 6½	667 p 6½
Chota Nagpore	—	94	5	356 p 5

MOVEMENTS of TEA in LONDON (in lbs.) during SEPT., from TEA BROKERS' ASSOCIATION FIGURES.

				IMPORTS.				DELIVERIES.			
				1897.	1896.	1895.		1897.	1896.	1895.	
INDIAN	...	...	...	21,134,917	19,436,881	14,612,550		10,161,519	9,918,294	9,111,813	
CEYLON	...	...	...	6,866,558	6,314,700	5,242,122		8,936,676	7,884,308	7,342,080	
JAVA	...	...	...	325,640	329,280	342,230		372,330	436,450	372,400	
CHINA, ETC.	...	...	...	2,195,419	3,899,602	5,022,104		2,683,067	3,272,894	3,349,692	
TOTAL lbs. ...				30,522,534	29,980,463	25,219,006		22,153,592	21,511,946	20,175,985	

FROM 1st JUNE TO 30th SEPTEMBER.

				IMPORTS.			DELIVERIES.			STOCK.	
				1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.
INDIAN	...	...	...	41,522,611	40,474,222	38,744,586	36,982,374	34,898,148	33,640,719	36,775,449	32,326,684
CEYLON	...	...	...	36,810,832	33,717,606	30,388,358	34,117,872	31,441,540	30,291,038	22,646,140	20,830,600
JAVA	...	...	...	1,344,980	1,592,990	1,446,410	1,445,360	1,777,510	1,435,350	651,840	803,180
CHINA, ETC.	...	...	...	14,890,858	18,930,763	21,885,711	10,982,295	12,669,801	14,156,180	16,911,902	25,900,578
TOTAL lbs. ...				94,569,281	94,715,581	92,465,065	83,527,901	80,789,999	79,523,287	76,985,331	79,861,042

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Darjeeling	2,716 p 11½	2,840 p 11½	28,408 p 11½	27,195 p 11½
Doors	4,626 p 7½	7,024 p 7½	39,887 p 7½	40,467 p 7½
Kangra, &c.	219 p 6½	—	3,100 p 7½	796 p 6½
Neilgherry	345 p 7½	—	2,519 p 7	910 p 7½
Terai	1,108 p 8	426 p 6½	8,479 p 7½	3,592 p 7½
Travancore	376 p 6½	820 p 6½	2,593 p 6½	10,218 p 7½
Total sold on Garden Account 1st June to date 1897, 306,843 pkgs., av. 9½d. 1896, 298,136 pkgs., av. 9½d.				

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	3½d	4½d	5d	3½d
FANNINGS. (Red to brown, strong rough liquor)	4d	5½d	5½d	4½d
BROKEN TEA. (Brownish to blackish, strong liquor)	6d	7d	6½d	6½d
PEK. SOUG. (Blackish greyish, useful liquor).	6½d	7d	7½d	7d
PEKOE. (Greyish to blackish, some tip, useful liquor)	8½d	8½d	8½d	8½d
PEK. SOUG. (Blackish greyish, inferior liquor).	5d	5½d	6½d	5d
PEKOE. (Blackish greyish, some tip, inferior liquor)	5½d	6d	6½d	6½d

Ceylon. With comparatively light auctions, bidding was animated for all descriptions, slightly improved prices being occasionally obtained. The Official Wire gives shipments to U. K. during Sept. as 6,250,000 lbs., against 6,500,000 lbs. last year, making the total from 1st January 77,500,000 lbs., against 73,000,000 lbs. last year, and estimates the quantity for Oct. at 6½ to 7¼ million lbs., against 6½ million lbs. last year. Average for week 8½d., against rather under 8½d. for same time last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 877,223 pkgs., av. 7½d. 1896, 777,517 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6½d	6½d	7½d	6½d
PEKOE (Ordinary leaf, little twist; fair liquor)	7½d	8½d	8½d	8½d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5½d	5½d	6½d	5½d
PEKOE (Somewhat bold leaf; indifferent liquor)	6½d	6½d	7½d	6½d

Javas sold with strong demand at prices showing as light advance.

SUPPLEMENT TO "PLANTING OPINION."

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8½d.) October 8th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry ...	345 p	7½												
Brooklands ...	109 b	10	109 b	10 10½	...	...	...	...	78½c	6	...	...	...	...
C ...	78½c	6	...	...	...	...	...	...	...	...	...	...	...	...
Glendale ...	61½c	8	32½c	9	29½c	†6½	...	...	...	...	...	...	...	...
Kodanaad ...	97 p	7½	...	...	17	7	30½c	9½	39½c	5½ 6½	...	...	11½c	7½
Travancore ...	376 p	6½	...	...	...	...	...	...	...	...	...	...	...	...
Elderslie ...	119	6½	...	...	54	5½	50	7½ 8	13	5	...	...	2	2½
Isfield T Co ...	83 p	6½	14½c	7½	21	6½	20	7½	20	5½	...	...	8	6
Kanan Dev Hil C A.	174½c	7½	6½c	9	34½c	7½	75½c	8½	37½c	6	...	...	22½c	3 6½

Teas marked thus † indicate highest offer made.

CINCHONA.

The Chemist and Druggist of 9th October 1897 reports:—

CINCHONA.—The average quinine content of the manufacturing barks at last Thursday's auctions at Amsterdam was the highest on record. Not so very long ago a 5 per cent. average was considered a high one; last week it was 6·10 per cent. The richest parcel offered was one of 27 bales *Ledgeriana* crushed bark, analysing 9·24 per cent. This realised 58c. per ½ kilo. The highest unit paid was 7c. (at which 2,126 kilos. of bark changed hands), the lowest 5½c., at which 921 kilos. sold. The tone was very animated throughout the auctions, and improved steadily towards the end. The general opinion is that a further advance is imminent. Druggists' barks realised irregular but generally higher prices. There was an especially good competition for crushed *Succirubra*, which was readily bought by cinchonidine manufacturers. The following figures show the result of the first eight Amsterdam auctions (Jan.—Oct.) of the past five years:—

Year.	Total weight of bark offered.	Representing sulphate of quinine.	Average content of manufacturing bark.	Total weight of quinine sold.	Total weight of quinine bought in.
	Kilos.	Kilos.	Per cent.	Kilos.	Kilos.
1897	4,005,504	221,058	5·26-6·10	186,444	34,614
1896	4,528,277	240,309	5·05-5·83	202,126	38,183
1895	4,636,859	225,367	4·63-5·17	141,314	81,053
1894	3,443,031	161,659	4·61-5·12	125,727	35,932
1893	3,930,594	172,982	4·23-5·02	97,679	75,303

The exports of cinchona-bark from Maracaibo, S. America, in 1896 amounted to 161 cwt.

CINCHONIDINE has again advanced considerably. The *Auerbach* factory, who are the principal makers at present, have made heavy sales at 7½d. to 7¾d. per oz. and are now asking 8d. per oz. A good deal appears to have been bought for shipment to the States. It is said that the British Government recently gave orders for several thousand ounces, but only succeeded in obtaining a 1,000-oz. parcel. The B. & S. factory are rather out of the market in this article at present. About a year ago cinchonidine sold at ¾d. per oz.

QUININE.—The beginning of the week witnessed considerable excitement in this article. Between Saturday and Tuesday fully 100,000 oz. were sold, mostly from second hands, at from 1s. 1½d. up to 1s. 3¼d. per oz. It is even said that 1s. 3¼d. per oz. was paid, but this seems doubtful. Since then a complete quietness has come over the market, and to-day it is difficult to quote a price. The nearest figures seem to be: sellers at 1s. 3d., possibly 1s. 2½d., but no buyers over 1s. 2d. per oz. This applies to the standard German brands. With regard to special makes, we may say that *Howard's* quinine is still quoted by the makers for "small

wholesale lots" at 1s. 3d. per oz. for bulk, and 1s. 5d. per oz. for vials. *Whiffen's* sold yesterday in bulk at 1s. 3d. per oz. *Taillandier's* agents have no price at present. The B. & S. agents also have no quotation; but a few 1,000 oz. of *Amsterdam* quinine are offering at 1s. 4d. per oz. *Brunswick* also quotes 1s. 4d., and *Auerbach* offers small lots at 1s. 3d. per oz. In second-hand 1s. 2½d. per oz. was paid on Monday for *Howard's* quinine, and 1s. 3d. for B. & S. and *Brunswick*. *Auerbach* sold on the same day at 1s. 2d. per oz. from the factory (October—December delivery), and at 1s. 3d. per oz. in second-hand. To-day there were second-hand sellers in Mincing Lane at 1s. 2d. per oz. We have compiled the following table, showing the unit price of bark (in cents) at the Amsterdam auctions of the past six years, and the average price of German second-hand bulk quinine in London (in pence) during the weeks in which the Amsterdam auctions were held:—

1897.			1896.			1895.		
Auc-tion.	Unit.	Quinine.	Auc-tion.	Unit.	Quinine.	Auc-tion.	Unit.	Quinine.
	Cents.	Pence.		Cents.	Pence.		Cents.	Pence.
Jan. ...	2·12	9	Jan. ...	3	13½	Jan. ...	2·70	11½
Feb. ...	2·90	8½	Feb. ...	2·82	13½	March. ...	2·50	11½
April ...	3·90	8½	March. ...	2·80	13½	April ...	2·85	11½
May ...	4·10	8½	May ...	2·85	12½	May ...	2·92	12
June ...	4·20	8½	June ...	2·90	12½	June ...	2·87	12½
July ...	4·30	9	July ...	2·85	12½	July ...	2·72	12½
Aug. ...	4·32	9½	Aug. ...	2·55	10½	Aug. ...	2·60	13½
Sept. ...	6·27	12½	Oct. ...	2·55	10½	Oct. ...	2·88	13½
			Nov. ...	2·17	9½	Nov. ...	2·90	13½
			Dec. ...	2·25	9	Dec. ...	3	12½

1894.			1893.			1892.		
Auc-tion.	Unit.	Quinine.	Auc-tion.	Unit.	Quinine.	Auc-tion.	Unit.	Quinine.
	Cents.	Pence.		Cents.	Pence.		Cents.	Pence.
Jan.	3·95	10½	Jan.	5·80	9½	Jan.	6·60	10
March. ...	4·40	11½	Feb.	5·60	9	Feb.	6·75	9½
April ...	4·42	10½	March. ...	5·28	9½	March. ...	6·88	10
May ...	4·30	11½	April ...	5·16	9½	May ...	6	9½
June ...	4·10	10½	June ...	4·88	9½	June ...	6	8½
July ...	4·50	10½	July ...	3·55	9	July ...	6·25	8½
August. ...	4·35	12	August. ...	2·62	8½	August. ...	6·13	9
October ...	4·93	11½	Oct.	2·70	9½	Sept.	6·13	9
Nov. ...	3·50	11½	Nov.	3·35	9½	Nov.	6·13	10½
Dec. ...	2·80	11½	Dec.	3·88	10½	Dec.	6	9½

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, NOVEMBER 6, 1897.

[No. 32.]

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SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 12th November 1897.

SEASON REPORTS.

Coorg. POLLI BETTA, 4th November.—*Weather.*—The very heavy shower of the 26th ultimo, amounting to over 3 inches, which came down in the space of an hour, was not all-embracing. Out East it was light. Siddapur way I hear over 4 inches fell. From the 28th ultimo to 2nd inclusive the weather has been fair, with clouds hanging about. On the night of the 2nd there was a small shower, and yesterday it was wet. *Crops.*—Picking is general now, from $\frac{1}{2}$ to $\frac{3}{4}$ bushels being picked per cooly. *Interesting Item.*—Rifle meeting at Mercara.

Nellampatty (British). 3rd November.—*Weather.*—Rain for fortnight, 1.10; to date, 159.46. N. E. Monsoon is with us in a very mild form here; its total rainfall has been 1.10, but other places have had more; yesterday and to-day seem more like monsoon in reality. *Crops.*—Rice $8\frac{1}{2}$ to 10 measures per rupee, depending on how much water has been put to swell it! Gram $12\frac{1}{2}$ per rupee. *Plant-diseases.*—Very little leaf-disease showing except in young clearings, where it is very evident. *General Health.*—Fair: colds are prevalent. *Labour.*—Sufficient. *Interesting Items.*—Nil.

Kadur. MUDIGERE, 2nd November.—*Weather.*—Heavy rain on the 27th and 28th October; 2.25 in two days. Fine bright weather ever since and promises to continue so. *Crops.*—Picking has begun on a few estates, but the majority of estates have no signs of ripening yet. It is feared that there will be a large percentage of light coffee. *Plant-diseases.*—Leaf disease is still amongst us, but by no means so severe as last year. First-class crops might be picked next year if the “enemy” keeps away. *General Health.*—Cholera that was prevalent in Gonibede and on one or two estates has quite disappeared, but *dysentery* is a common complaint amongst the coolies. *Labour.*—Plentiful. *Interesting Items.*—The weekly bazaar at Chikkanhully is not quite the success it might be; the *Relur sante* is still kept up. There was not enough rice last Sunday to supply the wants of the many estates around Chikkanhully. Sir Graham Anderson arrives in Bombay on the 4th by P. and O. *Egypt.* Col. Robertson, the Resident, is expected about the end of the month. Assistant Engineer Mr. Rice at

SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, “Planting Opinion,” Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

Mudigere has been doing excellent work on the roads. The main road to Mangalore through *Kotigehar* is in perfect order and does him much credit. Complaints are easily and frequently made, so it is only fair that when good work is done it should be praised.

Nilgiris.

COONOR, 3rd November.—Not much doubt about the N.-E. being again with us, unless it be explained away by the usual theory of cyclones on the East Coast. As much as $4\frac{1}{4}$ inches fell on the 1st near Coonor. Coffee ripening up fast, and looking well except on heavily-bearing gardens, where an inordinate amount of dying back of primaries is observable. Tea still flushing well, and no signs of bug so far. Good deal of sickness among coolies, though nothing serious. Gravest form is "mallay seeeku", not unusual at this time of year.

KOTAGIRI, 4th November.—October has been marked by absence of the heavy rain usual in this month on this side of the district and notable for spells of fine, cold, enjoyable weather after all the recent heavy rain, one break extending for 12 days, from the 17th to the 28th, just when, from all past records, one would have looked for heavy monsoon weather from the N. E. During that spell of fine weather a fresh breeze was blowing from over Dodabettarangeto the westward, and old hands here opined that the N. E. Monsoon did not make any established show till the very end of October, and these first few days in November, which have been marked by thunderstorms and heavy rain from the right quarter. In October the rainfall in the station has been only 4.40 in., the smallest fall yet recorded, against an average due of 14.19 in. November has opened out very stormy and wet; within the last five days over 6.50 in. have fallen on the Coffee Estates half way down the Ghaut, 3.30 in. of which came down last Monday night and which caused a good deal of wash and knocked off some crop and messed the ghaut road a good deal. Fortunately there has been a general lull in the picking this side. Places that had got in one-fourth or one-third their crop have been quite slack, with only fly picking going on since middle of October and will not get on again to full pick till middle or end of this month.

GENERAL NOTES AND ARTICLES.

The "Central African Planter." Our planting contemporary was to have converted itself on the 1st ultimo into a general paper, like the *Central African Times*. We congratulate the "C. A. P." on its development and wish it all success.

To prepare Papaw juice. The Papaw Juice, which is now quoted at 5s. per lb., is easily prepared. The unripe fruit has to be scarred or lined some $\frac{1}{4}$ in. deep, with a sharp knife daily, and the juice caught and dried upon sheets of glass, when it becomes at once a marketable commodity. The active principle, papaw is in much esteem as a medicinal agent. The *Chemist and Druggist* gives the following method of preparing it:—"The juice is pressed out of the fruit, clarified by filtration through a twill bag, and the ferment precipitated by alcohol. It is then dried, but is sometimes purified by treatment with water."

Where camphor grows.

Whoever wishes to undertake the cultivation of camphor had better begin soon, for the number of places where the tree thrives is legion. Egypt, the Canaries, South East France, Buenos Ayres, California and Madagascar are all countries where camphor thrives. In Tokio, Japan, they withstand

the frosty nights of winter and a minimum temperature of 12° F. In Australia, too, camphor grows very freely. The increased demand for camphor for use in explosives and in the manufacture of celluloid gives greater importance than ever to this commodity. The Japanese have commenced to prepare it by distilling the leaves and branches of the trees instead of destroying only full-grown trees for the purpose. It is decidedly worth while to ascertain if the shrub growing in the warmer climates will bear cutting sufficiently well to yield an adequate return of camphor when distilled. We wonder if this new departure of the go-ahead Japs dated from the publication of Mr. D. Hooper's researches at Ootacamund, published a year or two ago?

Gold and silver production.

The following extract from the *Statist* of 25th September 1897 will prove of great interest to that small band of our readers who try to follow the "inwardness" of the exchange question:—

ESTIMATED WORLD'S PRODUCTION OF GOLD (VALUE) AND SILVER (OUNCES).

	Gold. Value of Production. £	Silver. Millions of oz.		Gold. Value of Production. £	Silver. Millions of oz.
1850	11,600,000	—	1874	22,950,000	64½
1851	17,200,000	A28½	1875	22,700,000	60
1852	36,550,000	A28½	1876	22,540,000	63½
1853	31,090,000	A28½	1877	23,830,000	68½
1854	25,490,000	A28½	1878	22,020,000	72½
1855	27,015,000	A28½	1879	21,400,000	75½
1856	29,520,000	A29	1880	22,130,000	76½
1857	26,655,000	A29	1881	21,150,000	81½
1858	24,930,000	A29	1882	20,500,000	87½
1859	24,970,000	A29	1883	20,640,000	89½
1860	23,850,000	A29	1884	20,830,000	86½
1861	22,760,000	A35½	1885	21,250,000	93½
1862	21,550,000	A35½	1886	21,430,000	95½
1863	21,390,000	A35½	1887	21,500,000	.98
1864	22,600,000	A35½	1888	21,985,000	107½
1865	24,040,000	A35½	1889	23,835,000	124½
1866	24,220,000	A43	1890	24,260,000	132
1867	22,805,000	A43	1891	26,700,000	138
1868	21,945,000	A43	1892	29,900,000	153
1869	21,245,000	A43	1893	32,600,000	166
1870	21,370,000	A43	1894	36,765,000	167½
1871	25,500,000	52½	1895	41,000,000	169½
1872	24,200,000	57	1896	45,000,000	161
1873	23,600,000	*62½			

The letter A designates averages.

On this the Editor of the *Produce Markets Review* has the following sensible remarks:—

The above figures from *The Statist* are of the greatest value to the business world, which cannot very closely follow the theories of bi- or mono-metallists. Here we have the plain fact that the supply of gold has doubled in the last ten years, while we all know, to our cost, that the prices of produce, other than the precious metals, have fallen continuously during the same period. This apparently endless depreciation in values cannot therefore be due, as was alleged, to the increasing scarcity of gold, for that metal is infinitely more abundant than it was. In the same period the supply of silver has increased some 60 per cent., thus showing that its relative price, as compared with other commodities, has still been so high as to stimulate production. The silver party believe that if civilised mankind would only "pretend very much" that a shilling is worth a florin, we should all be set right, and unheard of prosperity would follow. Unfortunately, the action of the Bank of England lends a colour of respectability to such visionary dreams, although nothing of the sort was probably meant to be conveyed. The great rise in wheat, coincident

with a great and renewed depression in silver, shows that the course of prices is dependent on far wider causes than the demonetization of silver by Germany and Japan. We were told that agriculturists were ruined because silver had fallen. It has fallen still further, and farmers are much more prosperous than they were.

THE U.P.A.S.I. SECTION.

THE CLOSING OF THE MINTS.

THE following is a draft of a letter that it is proposed to send on behalf of the U.P.A.S.I. to various Chambers of Commerce, the different Planting Associations and large Industrial Institutions of India, Ceylon, &c., and the leading Banks and Firms :—

DEAR SIR,—At the last Annual Meeting of the United Planters' Association of Southern India, I was instructed to address all the large Produce Associations and Chambers of Commerce and Mill Owners in India and Ceylon with a view of ascertaining whether they would join us in forming a combination for the purpose of representing to the Secretary of State for India and the Houses of Parliament the critical condition of the producing industries of this country; and to forcibly point out that if the present financial policy is long continued, the export trade of India must seriously suffer, with the result that the final position of the Government of India will be worse than if it had never made the fatal blunder of tampering with the currency.

2. In accordance with this resolution, I beg to request that you will favour me with the views of your { Firm Chamber Association

(a) On the closing of the Mints and the general policy of the Government of India in endeavouring to create an artificial rate of Exchange;

(b) On the effect that this artificial rate has had on your industries.

3. With regard to ourselves, the effect of the present financial policy of the Government of India has been as follows :—

Our chief industries are the growing of coffee and tea. Our coffee has to compete with Brazil, and our tea with China and Japan. Taking the present intrinsic value of the rupee at between 9d. and 10d., the Government has forced it up to nearly 1s. 4d., or 60% over its real value. Brazil has nominally a gold standard, but owing to bad financing, the value of its standard coin, the Milreis, has fallen during the past ten years from 27d. to between 8d. and 9d., so that for all practical purposes Brazil is a country with a currency on a level with that of all silver standard countries.

As a result, Brazil has flooded the markets with coffee which she can sell profitably, owing to her low rate of exchange, at 40s. per cwt. In India, on the other hand, under existing circumstances coffee cannot be produced at a profit under 80s. per cwt. Luckily, owing to its superior quality, it can still command this price, but it has to compete with the better quality coffees of Costa Rica and other silver standard countries of Central America. We would point out to you that this action of the Government of India in maintaining an artificial rate of Exchange acts as a bounty in favour of those countries of 60%.

4. In like manner our teas have to compete with China and Japan. The former has a silver standard, and Japan, though she has recently adopted a gold standard, has fixed her Exchange (doubtless having this and other competition in view) at the present low rate ruling in silver standard countries, and is for practical purposes one of them. Here again, owing to the action of the Government of India, China and Japan enjoy a bounty of 60%. Although Indian and Ceylon teas have been able to wrest the British and Colonial markets from China and Japan, they have only succeeded in doing so owing to their low rate of Exchange in the past, and even then at a cost to themselves of more than 50% reduction in the price of their teas.

5. It must further be borne in mind that Chinese and Japanese teas, although inferior in quality, are still selling for a higher price in silver than ours, and that the Japanese exports have increased during the last twenty-six years from 18½ to 60 million lbs. and the Chinese from 236 to 239 million lbs. This increased export has so far found an outlet in the markets of Russia and the United States that our competition has been less keen. The struggle that is to come must be to conquer these markets, involving in all probability

a further fall in the gold price of tea. In view of these facts, we maintain that it will be impossible for Indian and Ceylon Planters to continue giving this bounty of 60% to their rivals and yet compete with them successfully in the world's markets.

It seems to us that the future prosperity of India and the safeguard for its increasing population, shielded by Government from war and famine, depend mainly on the cultivation of the enormous tracts of waste land that it contains, and as pointed out in the *London Times*, this has hitherto been effected by the cultivation of articles of export such as tea, coffee, jute, cotton, wheat, and seeds. Owing to the constant opening up of new countries and increasing facilities of cheap communication with the world's markets, the gold price of India's produce is more likely to fall than rise. It seems, therefore, the height of folly for the Government of India deliberately to throw away the advantage which a low Exchange gives the export trade of India in their severe competition both with gold and silver standard countries.

6. We shall be told that the loss to the export trade is largely balanced by the gain of the import trade, but the latter is a smaller trade than the former, is not so necessary, and depends for its volume largely on the power of the exporters to purchase imports. If the export trade suffers, the import will also suffer proportionately, and the better off exporters are, the more imports they can purchase.

7. We are well aware that the Government of India is not in a position to forgo the saving now effected in Sterling charges without increasing its taxation to a considerable extent. But we believe that if Government were to re-open the Mints and refrain from tampering in any way with Exchange, the export trade of India under a low Exchange would very rapidly increase (as has been exemplified by the coffee and wheat trades of South America), and that with increased land and other sources of revenue, the imposition of a direct 5% export duty would be found sufficient to cover the loss on the home charges. We as producers would infinitely prefer to submit to a direct tax than suffer this indirect loss of 60%.

8. Our proposition, therefore, would be that the Government of India be requested to re-open the Mints and refrain from tampering in any way with the rate of Exchange, and that it should refund itself for the losses caused by this policy by the imposition of a 5% export duty.

“THE PROSPECTS OF RAMIE CULTIVATION IN PERAK.”

MR. L. WRAY'S ESTIMATE SHOWS A LOSS ON THE CULTIVATION; MR. E. MATHIEU—A NETT PROFIT UP TO 136½ DOLLARS PER ACRE. MR. J. M. MACDONALD'S ESTIMATED PROFIT, £25 TO NEARLY £50 PER ACRE! WOULD THE SOUTHERN PROVINCE OF CEYLON RETURN £5 PER ACRE PROFIT?

Our readers may be inclined to pass over the following article with scant attention, if not disgust as of articles on Ramie there is a surfeit. But we are of opinion that—with the exception of Mr. Macdonald's estimates perhaps—these notes form the most valuable contribution to Ramie literature yet published. They are abridged from our contemporary, the *Ceylon Observer*.

The following estimates of yield have been prepared by Mr. L. Wray, Jr., for the Perak Government :—

	Fibre.	Ribbon.
	lb.	lb.
Forbes Royle	960	1,280
J. Montgomery (mean)	986	1,314
Hardy	1,260	2,100
E. M.	610	1,080
E. Mathieu	1,881	2,508
Mean yield per acre	1,173	1,656

The mean yield of fibre is therefore a few pounds over half a ton, and 739 of a ton of ribbon per acre, that is about 14½ cwt. or 12½ pikuls.

Then as to cost :—
Very little is to be found, in any of the accounts of ramie, of the cost of the cultivation. It is variously stated that one cooly can keep in order 2 to 3 acres of land; while no information is available

as to the cost of gathering, boiling, stripping, drying and baling the ribbon. Taking the mean, that is one cooly to $2\frac{1}{4}$ acres of land, or 2 coolies to 5 acres, and the wages at \$9 per month, the cost per annum is \$43.20 per acre, and per ton of ungathered ribbon \$58.45. As I have already said, there is nothing on which to base an estimate of the cost of harvesting and preparing the crop. The process is as follows:—The stalks are cut near the ground, then stripped of leaves and topped. They are then carried to the boiling tanks and boiled for about a quarter of an hour. The bark is then stripped off by hand, carried to the works to dry; when quite dry it is sorted into lengths, and baled ready for shipment. Considering that some 15 tons of stalks have to be treated per acre, I do not think that less than \$20 could be allowed per ton of ribbon. This would bring up the cost of the ribbon to \$78.45 per ton or \$57.98 per acre.

There is then supervision, manure, rent, duty and buildings. The least that can be allowed for this is \$10 per acre per year. Taking a 500-acre estate this would be made up as follows:—

Rent at 50 cents per acre	...	...	\$ 250
Supervision, \$300 per month	...	...	3,600
Manure	...	...	500
Upkeep of buildings	...	...	250
Duty on 369.5 tons at $2\frac{1}{4}\%$	...	...	623
			5,223

The final cost of the ribbon would be \$91.97 per ton or \$67.98 per acre.

Summing up as to result, Mr. Wray is not encouraging:—

Dr. D. Morris, the Assistant Director of the Royal Garden, Kew, in a lecture delivered on the 30th November, 1896, gives the price of ribbon as £8 per ton in London. It does not appear that more than £7 (\$67.20) per ton could be reckoned on for the ribbon, and as by the above estimate it would cost to grow and prepare \$91.97 per ton, it would appear that there is a loss of \$4.77 per ton or \$18.30 for each acre of cultivation. There is another side to this question, and that is for the planter to also be the manufacturer of the finished product, in the same way as sugar planters are.

A reply to Mr. Wray's Report came from Mr. E. Mathieu of Singapore, who quotes actual experiments made for two years at Buitenzorg, Java, under the control of the Director of Botanic Gardens:—

"One bouw gives four cuttings in one year, weighing in the aggregate 34,000 kilos of green stems, without leaves and topped."

In English figures this works out:—

One bouw ($1\frac{1}{4}$ acres) = 74,000 lb. of green stems, stripped and topped.
One acre = 42,800

He next quotes a series of American experiments; but we do not attach much importance to these, though the tabular results of all the experiments quoted may be given:—

I shall now bring together the figures presented you so far, and put them under tabular form:—

YIELDS OF RAMIE.

Countries.	Number of years' growth.	Number of cuttings per year.	Weight of stems, without leaves and topped, per cutting per acre.	Weight of stems, without leaves and topped, per acre per year.
Java	2	4	10,700 lb.	42,800 lb.
Louisiana	3 to 4	2	12,880 "	25,760 "
Texas	"	2	12,600 "	50,400 "
California, Kern Valley	"	4	11,013 "	33,040 "
Algeria	"	3		

It will be seen at a glance that while the above figures present very large differences in gross totals of the yearly crops, yet when they are apportioned into separate cuttings they agree very closely; the relative weakness of the weight of the Java cutting, as compared with those obtained in the States or even in Algeria, being explained by the fact that the latter experiments have been carried on for a longer period than in Java.

Mr. Mathieu is therefore inclined to think that after three to four years a ramie plantation in Malaya should give in four cuttings 20 tons of stems per acre per annum. Such an estimate we consider most unreliable to work on as a permanency, even on the richest soil and with the best possible cultivation. It may be done on a small

plot for a few years; but we scarcely think any practical planter—in Ceylon at any rate—would embark capital with the hope of harvesting 20 or 10 tons of a crop per acre, continuously. However let us see what Mr. Mathieu has further to say in respect of the "yield in fibre." We agree with him as to the great confusion over the different terms used:—

Yield in Fibre.—Turning now to the yield in fibre, here again we have to brush away the ambiguity attaching to the term fibre. It is dubbed ribbon, raw fibre, clean fibre, dry fibre filasse—without these words conveying any true idea of the standard of purity of the fibre nor of its value in money; and sellers of patents or machines have too often availed themselves of the vagueness of the terms used to impose on the public as to the output of their inventions." Mr. Mathieu adopts "clean dry fibre" and takes as the average of several experiments (chiefly with the Faure machine at Buitenzorg) an average of 3.75 per cent. He then recapitulates after the following attractive—not to say triumphant—fashion:—

My estimate of yield of ramie stems, stripped of leaves and topped, stands as shown above 20 tons per acre per annum. Greens stripped stems yield 3.75 per cent. of their weight in clean dry fibre, as sample No. 2, worth £32 in London. Therefore 20 tons of green stripped stems, the aggregate yearly crop of one acre, will give 1,680 lb. of fibre, worth £24 in London. Conclusion: The gross yearly product of one acre planted in ramie in Malaya is £24 in London.

Let us now establish the cost of production of these 1,680 lb. of fibre, and laying them down in London.

ACREAGE, 500 ACRES.	\$
Rent per acre	050
Cost of cultivation of 1 acre trimming and cutting superfluous roots; light hoeings	30.00
Manure (using the leaves and refuse from decortication)	4.00
Cutting, stripping of leaves, gathering and carting 20 tons of stems to factory	25.00
Management and Superintendence, per acre	20.00
Decortication { Cooly labour, 1 cent per lb. of fibre	16.80
{ Engine room wages, 1,680 lb. = $\frac{1}{3}$ day's output	6.20
Depreciation of machinery and upkeep	10.00
Cost of production of 1,680 lb. at the estate	112.50
Duty $2\frac{1}{4}\%$ on \$112.50	2.70
Pressing, baling, transport to port of shipment, freight to London, etc, \$30 per ton on 1,680 lb.	22.50
Total cost of 1,680 lb. of clean dry fibre laid in London	137.70

This figure of \$137.70 should be under ordinary conditions considered a maximum; under favourable conditions, and labour at \$6 per month, the expenditure should be much reduced. As it stands, however, it shows that one acre, at a cost of \$137.70, brings in a gross return of £24 or \$240, leaving a nett profit of \$102.30. But it is possible for the planter very materially to increase his profit by partially degumming his fibre himself.

How to gain the last-mentioned advantage with an additional profit of 34.20 dollars per acre, is thus described:—

Degumming, when the gum is yet fresh and fluid, offers very much less difficulty than when it is hardened, as is the case when the fibre is sent simply dried to Europe. Anyone can satisfy himself on this point by boiling freshly stripped ramie in water for, say, one hour; it will be seen that the fibre loses a notable quantity of its gum. If the boiling is kept up for several hours and a small quantity of washing soda added; or soft green soap, the reduction of the gum will be yet more complete: if the boiling is made under pressure in autoclave kiers an almost complete degumming can be obtained; but, beyond the fact that pressure implies more or less complication, it is not necessary nor desirable to carry the degumming so far, because in the presence of a perfectly finished fibre the spinner is apt to suspect the use of injurious chemicals; he prefers, as in the case of hemp and flax, to finish off the process himself with his own partial degumming, limiting himself to extracting, say, two-thirds or three-fourths of the gum.

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And then the final conclusion becomes:—

1 acre { =20 tons of stems, stripped and topped.
=1,680 lb. of clean, dry fibre.
=1,344 lb. of degummed filasse.

Cost of production ... \$163.50
Value in London ... 300.00

Nett profit ... \$136.50 per acre and per year.

Mr. Mathieu further thinks that the best market for the fibre is not Europe but China itself, since while he puts the whole production of Ramie (China grass) in China at 11,000 tons, the export is only 2,000 tons, the rest being used for local manufacture.

Finally among the papers sent us is an estimate from Mr. J. M. MacDonald (of MacDonald, Boyle & Co., London)—“of the machinery necessary to decorticate and degum the produce of 1,200 acres of land, and of the profits to be made from the cultivation of Ramie and its subsequent decortication and treatment on the ground, so as to render it fit for the manufacturer in which condition it will readily command £42 per ton in Great Britain for large contracts, and much larger prices for small quantities. In France as much as 2 francs per kilo, equal to about £90 per ton, have been offered; indeed at our mill at Long Eaton we are selling the noils or waste at from 4½d to 5d per pound.”

It may be judged from this passage alone that Mr. MacDonald is a sanguine man and that he writes after a magnificent fashion dealing in large figures. He is writing to Mr. T. Gipson, Hon. Secy. of the local Planters' Association:—

“In calculating the return from an Estate, I have taken six months as the time required for the plant to mature, but as you are aware, from your experience of Ramie on your Estate at Klange, it matures in three months. I have also taken the product at one ton only for the first six months, but properly planted this may be calculated at 1½ tons; also the product of the second year at 1½ tons, when two tons per acre can be relied upon if the land is suitable. The estimate for machinery does not include buildings. What I should suggest for the consideration of the Planters is that a central factory to degum the fibre should be erected on some suitable spot, and a battery of decorticators placed on each Estate where the Ramie is grown so that the decorticated fibre only need be sent to the central factory to be treated. Thus an enormous saving in carriage would be effected, the decorticators would be worked by the central factory, and credit would be given to the Planter for the weight of stems decorticated daily, and according to the weight of stems decorticated the amount of his proportion of the profits of the central factory could be determined. The cost of the machinery for the central factory, including working capital for six months, would not exceed £10,000, which will be returned in full with 9 months of the first crop, leaving a considerable profit, and after that the Planters will be receiving at least £25 net profit per acre for every acre under cultivation. By doubling the item of decorticators the output of the central factory could be doubled, the other machinery being equal to the output of 2,400 acres.”

We may as well put Mr. MacDonald's sanguine figures on record, though we fancy few practical Planters will put faith in those referring to returns on working of estate:—

RAMIE IN THE MALAY PENINSULA.

Estimate of cost of necessary machinery and erection thereof for treating the product of 1,200 acres; 900 being under cultivation, the rest being roads and paths

Decorticators, 4 installations of 40 drums, one installation of 20 drums, with 4-12 HP Engines	£ 1,898
Fixing and fitting same with brickwork including sheds	425
Degumming machinery, including fittings, &c.	1,000
Steam boilers and engine	1,000
Soaking tanks	250
Chemical tanks	250
Water tank	100
Steam pumps and appliances	100
Wharf with loading crane, weighing machinery, &c.	500
Soap tanks and fittings	125
Fittings for treating sheds	250
Steam barrels, steam valves and fittings	150
Belting, say	100
Baling machinery	500
Sundries, say	127
	6,775

ESTIMATE OF THE FIRST 12 MONTHS' EXPENSE OF THE CULTIVATION OF THE ESTATE AFTER PLANTING.

Allowing one coolie for each two acres of land for the cultivation and cutting purposes it will be necessary to employ 450 coolies who will keep down the weeds for the first five weeks, and cut the stems as they ripen, but in case of illness allow for 480 at 6d per day, this will amount per annum to ... 3,208 5 0

COST 6 MONTHS TREATING THE FIBRE, SAY 156 WORKING DAYS.

The first cutting will take place from four to six months after planting, so that there will only be 6 months' produce the first year.

Coolies collecting the stems and delivering to decorticators, 2 to each 100 acres, 18 at 6d per day	70 4 0
330 coolies working decorticators at 6d per day	1,287 0 0
16 coolies assisting in Mill and Baling and wrapping at 6d per day	62 8 0
Chemicals to treat 450 tons at £2 per ton of Filasse	900 0 0
Engineer, 6 months	200 0 0
Cultivation Manager	500 0 0
Works Manager, 6 months	250 0 0
	6,477 17 0

RETURN FROM ESTATE FIRST YEAR.

At the end of the first year from Planting it is estimated that the product will be at least 450 tons of cleaned fibre, ready for manufacturer. Taking the sale price of this at four-pence half-penny per lb. only, it amounts to ... 18,900 0

Cost of producing the above as on other side	£ 6,477 17
Freight £2 per ton	900 0
Brokerage and Incidentals, 2%	260 0
	7,637 17

Working Profit ... 11,262 3

The second year the Estate should be in full bearing, and producing 2 tons of cleaned fibre per acre, but for safe calculation we will only take it at 1 and-a-half tons per acre.

Product of Estate, 1,350 tons at four-pence half-penny per lb. (£42 per ton) ... 6,700 0

Cost	£ 3,208 5
450 coolies cuttings	...
18 do. collecting stems and delivery to decorticators	140 17
230 coolies on decorticators	1,799 15
60 do. assisting in Mill and drying and baling sheds	469 10
Chemicals £2 per ton	2,700 0
Engineers	400 0
Managers	1,000 0
Freight, £2 per ton	2,700 0
Brokerage and Landing charges, say 2 per cent.	1,134 0
	13,552 7

Working Profit ... 43,147 13

From these profits the Patentee's Royalty of 25% will have to be deducted.

For the present we would only note one little point of discrepancy. Mr. Mathieu writing on actual experience bases his estimate for Malaya on a 3½ years to 4 years old ramie plantation: Mr. MacDonald begins operations in six months after planting! It is a pity that planting opinion should, we feel, be prejudiced at the very outset by estimates and figures, which seem to us far too glowing. Far better pleased would practical men be to see a well-considered moderate statement work out a possible profit of £5 per acre than to be met with over £12 per acre profit the first year and well-nigh £50 of working profit in the second year from a cultivation which, so far as we know, no

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one has yet tried on a scale sufficient to justify reliable estimates for a plantation—at any rate in the Eastern world. Garden experiments are useful as guides; but they do not count for serious estimates on a big scale with experienced tropical planters.

The Southern province of Ceylon has been described by practical men as “a paradise for fibre-yielding plants” and labour in some parts is abundant and cheap. But we should be sorry to see anyone go in for “Ramie” there on an expectation of more than £5 per acre return—and even then the investment would be a venture as all pioneering attempts in the tropics invariably are.

Since writing the above we have seen it stated that Mr. MacDonald has arranged with a native Sultan (Datu Mahommed) to put 1,000 acres under Ramie and that a central factory is to be erected to treat the product after the MacDonald-Boyle process. This undertaking and experiment will certainly be watched with the greatest possible interest. Mr. MacDonald has a wide margin to work on, and we wish him all success.

INDIA RUBBER.

South America.

Of the two planting products which are just now exciting such wide interest, it is difficult to say whether Rubber or Ramie takes the cake for chaotic ignorance on the part of their supporters. Rubber-producing trees there are in great abundance, but of varieties to profitably cultivate, there are but few. Fewer still are the countries or districts where plantations can be made by the private capitalist. The most valuable rubbers are Bolivian and Para, which have touched 3s. 10d. per lb. and are steadily rising. They are obtained from various species of *Hevea* and of an allied genus, *Micrandra*. Plantations of *Hevea* in Brazil do not exist, as they thrive best in their natural habitat, i.e., malarious swamps under water for half the year. Plantations of *Heveas* in other countries have all failed commercially, even in Ceylon, where they apparently thrive exceedingly: the yield was only $\frac{1}{4}$ of the Brazil output. The Brazil trees are in myriads, and, were it not for lack of enterprise and capital, the imminent rubber famine would be many decades off.

The best rubber tree for cultivation, as distinct from the collection of rubber from trees in their natural state, is undoubtedly the *Castilloa elastica* of Mexico, British and Spanish Honduras, Guatemala, Nicaragua, Costa Rica, the Isthmus, and part of the United States of Colombia. The *Castilloa* is a totally different tree from the *Heveas*, and belongs to the same botanical order as the breadfruit, whereas the *Heveas* belong to the Spurgeae. The two trees have no characteristics in common, except that both yield india-rubber. The chief advantage offered by the *Castilloa* from the planter's point of view is that it will thrive on comparatively dry lands, or even on hills of moderate elevation, and, consequently, under far more favourable conditions for the planter than the *Heveas*. Its yield of milk is nearly, if not quite, as abundant, but its rubber is of about 40 per cent. less value. Properly prepared *Castilloa* rubber is worth from 2s. 3d. to 2s. 6d. per lb., according to condition, while the rubber prepared after native methods realises from 1s. 8d. to 2s. Improved systems of coagulation will in all probability raise the value to 3s. per lb., as compared with the present price of Para, but it is unlikely that it will ever be as valuable as Para, owing to the great difference in the chemical constituents of the milks. In its wild state the *Castilloa* is fast becoming extinct. In Costa Rica it is difficult to find a tree that the rubber collector can “put a knife into,” so close is the network of channels in the bark made by previous collectors. Saplings of two years old are tapped regardless of legal restrictions, and except on the few plantations, it is certain that there will soon be no *Castilloas* to tap. On the Mexican plantations and in Guatemala the trees are commonly tapped in their fifth year, when they yield from $1\frac{1}{2}$ lb. to

$2\frac{1}{2}$ lb. of rubber. In British Honduras the planters wisely leave the trees alone until their eighth or tenth year, when from 3 lb. to 5 lb. may be expected. The annual yield increases until a certain age is reached, and trees fifty years old have been known to give 20 lb. of rubber. The net profit on cultivated *Castilloa* rubber, so prepared as to be worth 2s. 4d. per pound, is from 1s. 4d. to 1s. 8d., according to the cost of labour in the country where it is grown. The margin is amply wide enough for profitable employment of capital. The proper place to commence plantation of *Castilloa elastica* is where the wild trees are not abundant. Like the *Heveas*, it does not seem to yield well where it is not indigenous. Jamaica and Trinidad have introduced it, and the growth of the trees has been all that could be desired, but the yield of milk is small. The same may be said of the *Castilloa* in the East Indies and elsewhere. It must not be forgotten that even in its home—Mexico and Central America—the yield of the *Castilloa* depends greatly on the situation. A loss must follow any attempt to cultivate it on very poor soils. The richest alluvial lands give the best results.

The principal rubber tree of India, Burma, and various other parts of the East is the *Ficus elastica* previously alluded to. It has been cultivated on a very extensive scale by the Indian Government in Assam, where promising results have been obtained, the average yield of 50 trees in one year amounting to 26 lb. per tree. The yield fluctuates, but the tree is well worth the planter's attention.

The rubber from Borneo, Sumatra, and the Malay Archipelago, which chiefly reaches us via Singapore, is mostly derived from species of *Willughbeia*, climbing plants so closely allied to the *Landolphias* of West Africa as to be, for all practical purposes, the same things. It is believed that in fairly healthy countries like Borneo, Sumatra, and Java, where land can be obtained for next to nothing, and labour is very cheap, the cultivation of the best of the *Willughbeias*, *W. firma*, would pay well, notwithstanding that the yield is small— $1\frac{1}{4}$ lb. in the sixth year, and the value of the rubber only 1s. 10d. per pound. The average price of Bornean rubber is considerably under 1s. 10d.; but that is a consequence of the native methods. They mix together milks of widely different values and adulterate the mixture with saps that contain no caoutchouc at all. The value of rubber from *Willughbeia firma*, carefully prepared under European supervision, may be safely taken at 2s. 6d. per pound. In their sixth year the *Willughbeia* stems are only about 2 in. diameter; but they grow to the thickness of a man's body, and the yield increases in proportion.

In the United States of Colombia there are a number of rubber yielders which in all probability it would pay well to cultivate. Many of the *Sapiums* are indigenous, and there is one variety identified at Kew as *Sapium higlandulosum*, which thrives on the mountains at a considerable altitude, and yields a rubber valued some years ago at 2s. 10d. per pound. Some species of *Hevea* are also found in Colombia, and Cartagena rubber, badly prepared as it is, is well known. Many of the *Sapiums* and a few species of *Hevea* are also found in Venezuela, and in British, Dutch, and French Guiana; but it would appear that, except in Colombia, no attempt has been made at cultivation. There still remain a score or more of rubber-yielding plants and trees to enumerate, but they are scarcely within the scope of this article as the prospect of their cultivation is very remote. One, however, ought not to be omitted. It is *Manihot Glaziovii*, a native of Brazil, yielding Ceara rubber, which is worth about 2s. 4d. per pound. This tree is wonderfully hardy, and it will thrive on arid lands; but its yielding capacity is very small. The rubber gatherers of Ceara nearly all emigrate to the Amazon, the home of the *Heveas*, which fact speaks for itself.

Ceylon.

Some recent correspondence published in the Ceylon papers shows clearly what has been, and what is being, done in rubber plantations in that Island. It is now twenty years since the Government of India procured seed from South America and introduced it into India and Ceylon. In the latter country three species have been established, and seed freely. Mr. Thiselton-Dyer now draws attention to another variety, the *Kicksia africana*, a West African tree of great value. Ceara, *Manihot Glaziovii* rubber, was cultivated in

Ceylon about 12 to 14 years ago, but the yield was extremely disappointing. Panama (*Castilloa elastica*) is very scarce in the Island, while the Lagos (*Kicksia africana*) has only been introduced the last two years. The only rubber of importance now cultivated is the Para (*Hevea brasiliensis*) variety which was introduced in 1876 and were planted in the Heneratgoda Gardens. These are now 60 feet high and 4 feet in girth (6 feet above ground), and the 450 trees produce annually 75,000 seeds a year, which is many times under the demand. The price at which it is sold is Rs. 5 per 1,000 seed, not more than 3,000 seed being given to any one applicant. Private planters are now getting Rs. 20 per 1,000. The 3,000 seed are only sufficient for four to five acres. The best land is fairly flat land at about sea level. Good soil, uniformly wet climate and not subject to frequent floods or heavy winds. Observations of the yield obtainable from a single tree at Heneratgoda shows $\frac{1}{2}$ lb. per tree per annum for the 10th year upwards. The trees being planted 30 feet apart gives 75 lb. per acre as the annual yield. This is not sufficient to pay well. A new series of tapping experiments on 11-year old trees planted 12 feet apart give a yield of 112 lb. per acre (6 oz. per tree). This should pay fairly well, considering the high price of rubber and the small cost of cultivation. Good para rubber in London is worth from 2s. 6d. to 3s. 6d. per lb., so that 112 lb. equals about £15 to £16. To judge from the great demand for seed, seed-bearing plantations would pay handsomely, as much as Rs. 200 per acre. It is noteworthy that though, as stated above in the article on Brazil rubber, para rubber does best in flooded lands in its native habitat; in Ceylon floods were the cause of portions of the plantations dying out altogether. There are about 600 to 700 acres of young rubber (1 to 10 years) now planted in Ceylon held by private owners.

LETTERS TO THE EDITOR.

BANANA MEAL.

SIR,—Having seen several articles in your paper on the exportation home of 'plantains' or 'bananas' and on the making of 'banana flour,' I should be extremely obliged if you could get or give me some further or particular information on the subject.

A.B.C.

SAKLASPUR, }
26th October 1897. }

[If our correspondent will specify the particular points on which he desires further information, we shall be glad to help him as far as possible. Very little that has been published on the subject up to date has failed to be noted in these columns.—Ed.]

EFFECT OF FORKING ON YIELD OF TEA.

DEAR SIR,—Will those who are able to give statistics kindly state what result in yield of tea leaf and quality of resulting tea has followed upon the trenching up of the ground or forking any depth during monsoon or growing season?

What depth below the surface have the small feeding rootlets of the tea bush usually been observed, and has any planter succeeded in persuading his tea bushes to throw out rootlets lower down in the soil than they were previously found.

This seems to me an important matter in view of the very great stress that our Ceylon brethren lay upon avoiding all disturbance of the roots of tea bushes.

PLANTER.

E. LITHOSPERMA SEED.

SIR,—To meet the great and increasing demand for *E. lithosperma* seed, I have for some time been conducting experiments to overcome the notorious delicacy of the seed and ensure its successful germination. Not only have I carried my experiments to a successful issue, but I have been in communication with Messrs. Sutton and Sons, who have very kindly advised me as to the best way of preserving the vitality of the seeds. While I am prepared to guarantee the germination of 50%, I expect in future a very much higher percentage will germinate. I hope the advantages of the guarantee will be appreciated, for it enables the cost of plants to be calculated exactly on the basis of the guarantee. They cannot cost more than calculated on 50%, and may cost a great deal less with a high percentage germinating.

At the guaranteed rate, *E. L.* may safely be claimed, without fear of contradiction, to be the cheapest fertiliser ever known for coffee.

B. NELSON.

ARIENKOW, }
SHENKOTIAH, 18th October 1897. }

COFFEE.

Nyassaland.

The present British Central African crop is estimated at 9,000 cwt., and shows—we speak from memory—a healthy increase on that of last year. The local Chamber of Agriculture and Commerce have decided to obtain the seed of suitable shade trees from Bengal, as there is little danger of importing the dreaded leaf disease therefrom. They will have to do without *E. lithosperma*, though, as it is unobtainable (the thornless species at least) except in Southern India.

The Market.

A further addition of 7,670 tons in the European stocks, and of 37,160 tons in the world's visible supply, has, says the *Produce Markets Review* of 9th ult., brought the latter up to 351,310 tons, which is an increase of 133,000 tons over the same date last year. Against this, however, must be put the fact that the deliveries, both in Europe and the United States, show a steady and consistent growth, amounting in the nine months of this year to an increase compared with last year of nearly 65,000 tons. To many it may be surprising that with such figures the market remains so steady, but the explanation is no doubt that there is comparatively only a small supply of either good medium or fine Coffees, and that there is a strong consumptive demand for such, while the commoner sorts, of which the bulk consists, have fallen to as low a price as can be expected. Any little favourable sign is no doubt made the most of to raise quotations in the terminal market, but the weight of Coffee eventually causes a reaction again, and prices con-

COFFEE SHADE TREE.

Sun-dried *Erythrina lithosperma* loppings, &c., contain per ton:—

61.50 lbs. of Nitrogen, 57.38 lbs. of Potash, 14.92 lbs. of Lime, and 13.68 lbs. of Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of the above analysis at Rs. 6 per pound containing about 2,000 seeds. Germination guaranteed.

Only thornless variety extant, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE, SHENCOTTIAH.

sequently are constantly fluctuating within 1s. or so. At auction coloury New Grenada and similar qualities have fetched full prices, while East India and Plantation have sold steadily. The Dutch Trading Company have advertised their next sale for Tuesday, when 20,100 bags and 30 cases will be offered, against 24,503 bags and 346 cases at the corresponding sale last year.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended Oct. 2, 1897.	Tons. 322	Tons. 287	Tons. 480	Tons. 345	Tons. 11,450	Tons. 8,696
For the 39 weeks ended Oct. 2, 1897.	10,701	11,047	16,760	16,589	—	—

TEA.

Exports from Calcutta. The total sailings of Indian tea from Calcutta from the 1st of April to the end of September was only a little over 69½ millions, against 71½ last year and 65½ the year before. The exports to America, notwithstanding this decrease in total sailings, is 866,000 lbs odd against 677,000 and 546,000 previously. Those to Australia on the other hand show a decrease, as also those to "other places" unspecified. Great Britain again has absorbed about 1½ million pounds less than last year. Ceylon, total exports this year to the end of September show an increase of over 7½ million.

"Sirocco" Machinery.

Messrs. Davidson and Co.'s latest edition of their catalogue of tea machinery conveys a vivid impression of the excellence which they have attained in this line. They have the unique reputation of being the only firm who can supply the factory with a complete rig-out of the most modern machinery from leaf lifter and witherer to sizer and packer. And without a suspicion of advertisement paragraphing, vulgarly known as "puffs," we can safely affirm that each and every item compares favourably in all respects with those turned out by other firms, though these make specialities of one or two branches only. New worlds there are yet to conquer, however, though it may seem ungenerous to say so, and in the field lie many branches untouched by the inventive genius of the firm. Perhaps the important need of the latter-day planter is a good mechanical plucker, to invent which individual attempts have been many. May it be soon that our congratulations shall be proffered to Messrs. Davidson and Co. on the successful solution of the difficulty!

To economise labour.

The last of the answers to the series of questions under this heading has been published by the Ceylon *Observer*, and this is its summary thereon, terse and to the point:—

"Tramways are unsuited to most estates, and their initial cost stands in the way of their use, except under very exceptional circumstances. (2) Wire tramways are doing good work on the few places on which they have been erected, and their extended use should follow the high appreciation of them which our circular has elicited.

(3) Wire shoots are in tolerably extensive use; and their use is likely to spread, through the removal of the prejudice against them for the transport of leaf, on the strength of the testimony of experienced planters who have reduced the damage to leaf to a minimum by the exercise of ordinary care. (4) Among other labour-saving appliances must be included roads, carts, telephones, up-to-date machinery and a well-ordered Factory—all directed by strict, yet considerate oversight. (5) The great majority of planters prefer clean weeding partly on the principle that what is, must be best, and, partly, because the kangany must be propitiated, and weeding contracts have been his immemorial and most welcome perquisite; but a few who are not afraid to tackle a new difficulty are experimenting with water holes and selected weeding, as a means of reducing wash and conserving the soil-constituents. (6) The principle is sound of the system of drainage; but modifications, called for by local circumstances, should be more readily adopted. (7) The multiplication of boutiques carries with it risks of theft of produce, illicit sale of arrack, and growing indebtedness. (8) Arrack Taverns and Liquorshops are an evil; but they are the lesser of two evils; as, in their absence, illicit traffic is inevitable. (9) Just, firm treatment of the cooly is the great panacea for labour troubles and discontent; and to secure this, the master must be in touch with his men, sympathise with them, and not be too often absent from the estate, whether on pleasure or business."

The London Market.

INDIANS.—Many of the Teas brought forward have been of better quality, says the *P. M. Review* of 9th ult., and as there has been a good selection on offer, an active and large business has been transacted. The firmer tendency noticed last week has been maintained, and for the common descriptions a further slight advance has been established. Souchongs and Pekoe Souchongs, with a clean useful infusion, are not obtainable under 5½d, and are scarce even at this price, and the same remark applies to Broken Teas. The next higher grades offered included a much better and more useful assortment of Sylhet and Dooars Teas, which, in consequence of their improved quality, met with a good inquiry; and although they have brought higher prices than similar marks of previous shipments, the intrinsic value is equally favourable to buyers. For the finer sorts the demand remains steady, and business continues fairly active at late prices. The only movement of importance has been in the finest grades, which are not so freely offered, and on the whole a higher range of prices has been obtained, especially for the Assam growths, which are likely to become less plentiful later on. Judging from latest advices of the crop it would appear that the deficiency is not likely to be so marked as was recently expected, the reports of the weather being much more favourable; at the same time, it is quite possible that the supply from Assam will not exceed, if it equals, that of last season. The figures of the past month, compared with September, 1896, are not encouraging to an advancing market, as it will be seen that the increase in the stock has made further progress, while the deliveries are only 243,000 lbs. in excess of last year. The comparative figures are: Imports 21,134,000 lbs., against 19,436,000 lbs.; deliveries 10,161,000 lbs. and 9,918,000 lbs. respectively; while the stock stands at 36,775,000 lbs., as against 32,236,000 lbs. The public sales comprised 41,425 packages, and only 4,175 were withdrawn.

CEYLONS.—The quantity offered at auction has again been small and firm prices have been paid all round, while a further advance was noticeable in some descriptions, more especially in the case of the medium Pekoes and Pekoe Souchongs. Notwithstanding the rise in values, there

seems every prospect of a still further advance, as the supply of Tea available for this market will be insufficient to meet the requirements of the trade for some little time to come. The quality, however, has been steadily improving, and some of the Teas on sale last Tuesday were distinctly better than we have seen for a long time past. Of the 20,300 packages offered at public auction, only about 700 were withdrawn, and most of these have since been sold. The sales advertised for next week only comprise about 16,000 packages. The following are the figures for the past month, compared with September last year:—The imports amounted to 6,867,000 lbs. against 6,315,000 lbs., and the deliveries were 8,937,000 lbs. against 7,884,000 lbs., while the stock stands at 22,646,000 lbs. as compared with 20,831,000 lbs. The exports from Colombo for September were 6,250,000 lbs., with a low estimate for the present month.

DISTRICT ASSOCIATION.

SHEVAROY.

PROCEEDINGS of the Monthly Committee Meeting of the Shevaroy Planters' Association held in the Victoria Rooms, Yercaud, on Monday, October 4th, 1897, at 10 A.M. Present: Messrs. R. Gompertz, Rahm, Junr., W. W. Hight, Revs. * M. Andersen, J. M. Kempf, Messrs. C. G. Lechler (*Chairman*), H. W. Leeming (*Honorary Secretary*)."

Notice calling the Meeting was taken as read.

Read and Recorded for disposal, at the General Meeting to be held to-day, correspondence re the proposal to charge a commission on Currency Notes presented for encashment at the Yercaud Sub-Treasury.

Read letter from Mr. C. D. Ricketts, dated September 29th, 1897, complaining that one of his cases had been struck off the file of the 2nd Class Magistrate's Court, at Yercaud, without his knowledge.

Resolved "that the matter be laid before the General Meeting to be held to-day."

Read and Recorded Circular, dated 15th September 1897, from Secretary, U.P.A.S.I., re Reserve Fund Circular, dated 12th September 1897, from Secretary, U.P.A.S.I., re North Wynaad Planters' Association Circular, dated 15th September 1897, from Secretary, U.P.A.S.I., re Finances.

Read and Recorded with satisfaction letter No. 5058, dated 29th September 1897, from the Collector of the District re Roads on the Shevaroyas.

Read and Recorded, for disposal at the General Meeting to be held to-day, letter dated 20th September, 1897, from the Secretary, U.P.A.S.I., asking what sum this Association is prepared to subscribe towards defraying the salary of an Agricultural Chemist, &c.

The following Papers were laid on the Table:—(i) *Planting Opinion* for September 11th, 18th, 25th and October 2nd, 1897. (ii) Agricultural Ledger, No. 8 of 1897. (iii) Proceedings of Board of Revenue, No. 6785, dated 24th August 1897, re Carrot Seed. (iv) Proceedings of the Lower Pulneys Planers' Association. Proceedings of the Wynaad Planters' Association.

With a vote of thanks to the Chair the meeting terminated.

C. G. LECHLER, *Chairman*.

HERBERT W. LEEMING, *Hon. Secretary*.

THE LIGHT THAT CAST NO SHADOW.

CURIOUS stories are told about the powers possessed by certain natives of India who live up among the Himalaya mountains. These old men, it is said, have devoted scores of years to the study of natural laws and forces which the rest of the world knows nothing about. Lately a German professor visited the "adepts," as these queer Hindus are called, for the purpose of finding out the secret of their remark-

able performances. They treated him rather scurvily, but interested him all the same. One day the professor wanted to examine some ancient Sanskrit manuscripts. An adept went with him to a cave wherein the books were kept. The place was dark as the bottom of a well.

"I can't see to read, here," said the visitor.

"Then we will have some light," was the reply, and immediately (the professor says) a soft, pearly light brightened the cave. He could not tell whence it came, but he noticed that it had one strange quality—*It cast not the slightest shadow.*

This is a story hard to believe, yet its truth is affirmed by a man of vast learning and high character, and you who now read it have no reason for doubt except that all the lights *you* have seen have cast shadows. Belief or unbelief commonly runs parallel with one's own experience. Dr. Johnson sniffed at the account of the Lisbon earthquake, yet credited the tale of the Cock Lane ghost.

A man who has been ill for years, and failed to find a cure, is sceptical when friends tell him of a medicine which they believe will make him well. What else but doubt could result from his experience? Take an example:—

"In the spring of 1888," writes our correspondent, "I fell into a low, weak, and languid state. I felt low-spirited and out of sorts. At first my stomach was deranged, my appetite poor, and after eating I had pain and weight at the chest. I was much troubled with wind, and frequently spat up a sour fluid, also bitter bile. Later on I suffered from nervousness and great depression of spirits. I kept up with my work, but had always a sense of discomfort. Off and on I continued in this way for two years, nothing that I took relieving me. At last I heard of Mother Seigel's Syrup and procured a supply. After I had taken only a few doses I found relief; my food digested, and gradually all nervousness left me. Although I had no reason at first to feel any confidence in this medicine, never having used it or seen it used, I now gladly admit its value, and its power over disease. Since my recovery, for which I thank Mother Seigel's Curative Syrup, I have been in the best of health and spirits. In the interests of suffering humanity, I deem it a duty to send you this testimony. (Signed) D. Griffiths, tailor and outfitter, 151, Hockley Hill, Birmingham, June 8th, 1893."

There is a deal of difference between Mr. Griffiths' candid letter and the story about the light that cast no shadow. The latter may be true enough, but it cannot be verified without more trouble than it is worth. On the other hand, we have a trustworthy witness, who will answer letters of inquiry, and can be found at his address.

Finally, there is nothing mystic or magical about Mother Seigel's Curative Syrup. It acts on the theory that most ailments are but symptoms, forms, or phases of that universal disease—indigestion and dyspepsia; it cures that, and throws the light of health and happiness over hearths and homes where illness and pain had cast such dark and terrifying shadows. And that is why people believe all that is told of its success by eager witnesses.

THOMSON'S ANTI-MALARIAL PILLS, THE PLANTER'S FRIEND.

The only known Antidote against Malarial Poison.

A sure and efficacious Remedy for Malarial Fever, Enlargements of the Spleen, Malarial Cachexia (Anæmia after Malarial Fever) and other Malarial Symptoms.

A Planter from Assam writes:—

"I have tried Thomson's Anti-Malarial Pills and find them to be most efficacious among my coolies. I can strongly recommend them."

SOLE AGENTS:

COLLINGWOOD & CO.,
EUROPEAN PHARMACISTS,
MOUNT ROAD, MADRAS.

P. THOMPSON & CO., Ootacamund, Engineers and Contractors.

MARKET SUPPLEMENT.

SATURDAY, NOVEMBER 6, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (October 15, 1897) says:—Auctions continue on a limited scale; the superior grades still attract good competition, but other kinds rather slow of sale.

About 600 bags East India were catalogued and mostly sold at previous rates.

Columbian, of which the sales chiefly consisted, realised very full prices for fine colory qualities, but the commoner descriptions in some cases had to be bought in.

Futures have been very quiet this week with only a small business passing, and quotations at the close have declined 3d to 6d since our last.

Movements of Tea in United Kingdom from 1st Jan. to 30th Sept., as shown by Custom House Returns.

	IMPORTS.			HOME CONSUMPTION.			EXPORTS.		
	1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.	1895.
BRITISH E. INDIES	76,643,963	68,404,859	70,191,463	92,006,158	88,080,621	82,035,182	3,758,006	2,461,673	2,760,657
CEYLON	78,214,371	74,960,664	68,407,241	65,306,015	59,861,211	56,726,272	7,804,955	5,885,257	5,382,176
CHINA	18,670,278	24,457,456	29,394,565	13,231,495	14,717,758	20,590,790	15,410,038	13,668,783	13,349,584
OTHER COUNTRIES	5,303,232	6,386,186	6,312,452	2,979,223	3,845,406	4,216,992	786,325	830,501	760,270
TOTAL lbs.	178,651,844	174,209,165	174,305,721	173,522,891	166,504,996	163,569,236	27,759,324	22,846,214	22,252,687

Analysis of above export of Tea from U. K. during the last two years (not including transhipments).

	INDIAN.		CEYLON.		CHINA.		OTHER COUNTRIES.	
	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.
COUNTRIES IN EUROPE	1,794,606	1,009,871	4,398,430	3,221,642	9,050,970	7,857,780	595,470	580,108
UNITED STATES	477,238	330,941	1,378,224	1,010,092	2,091,181	623,906	44,399	80,076
BRITISH N. AMERICA	847,301	566,593	1,203,741	953,172	1,463,456	1,682,276	11,204	30,173
OTHER COUNTRIES	638,861	554,268	824,560	700,351	2,804,431	3,504,821	135,252	140,144
TOTAL lbs.	3,758,006	2,461,673	7,804,955	5,885,257	15,410,038	13,668,783	786,325	830,501

Stock of all Tea in United Kingdom on 30th September, 1897, 80,949,313 lbs. 1896, 84,206,142 lbs. 1895, 84,852,177 lbs.

Indian. The market showed little change, except for Medium Teas which were here and there slightly easier. The following Official Wire referring to the reduced Crop Estimate has been received from Calcutta:—"Can see no prospect improvement." The following averages are worthy of note:—"Margaret's Hope," 1/5; "Poobong," 1/3½; "Con. T. & L. Co. Bloomfield," 1/3½.

Week's av. of Tea sold on Garden Account, 1897, 38,846 pkgs., av. 9d. 1896, 26,386 pkgs., av. 9½d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	18,054 p 10½	15,429 p 10½	173,732 p 11½	156,429 p 10½
Cachar and Sylhet.	10,090 p 7½	5,416 p 7	83,253 p 6½	76,626 p 7½
Chittagong	304 p 7	280 p 8	1,648 p 6½	947 p 7
Chota Nagpore	—	64 4½	356 p 5	560 p 6½
Darjeeling	2,649 p 11½	1,598 p 10½	31,057 p 11½	28,793 p 11½
Dooars	4,692 p 7½	2,359 p 7½	44,579 p 7½	42,826 p 7½
Kangra, &c.	278 p 8½	208 p 7	3,378 p 7½	1,004 p 6½
Neilgherry	151 p 7	182 p 5½	2,670 p 7	1,092 p 7
Terai	914 p 7½	481 p 7	9,393 p 7½	4,073 p 7½
Travancore	1,714 p 6½	369 p 6½	4,307 p 6½	10,587 p 7½

Total sold on Garden Account 1st June to date 1897, 345,689 pkgs. av. 9½d. 1896, 322,937 pkgs., av. 9½d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST.	(Fair ordinary, dark liquor)	3½d	4½d	4½d
FANNINGS.	(Red to brown, strong rough liquor)	4½d	5d	5d

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated October 15th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	482,338 packages.	500,300 packages.	16,879 packages.
1896-1897...	486,623 "	446,466 "	18,538 "
53,290 pkgs. INDIAN	Total 70,559 packages were offered in public auction this week.		
16,894 " CEYLON			
375 " JAVA			

Both at home and abroad the Teas of Indian and Ceylon continue to be used more freely each year. The market does not appear likely to be over-weighted with Tea during the present season.

	1897.	1896.	1895.	1894.
BROKEN TEA. (Brownish to blackish, strong liquor)	6½d	6½d	6½d	6½d
PEK. SOUG. (Blackish greyish, useful liquor).	6½d	6½d	7½d	7½d
PEKOE. (Greyish to blackish, some tip, useful liquor)	7½d	8d	8d	9d
PEK. SOUG. (Blackish greyish, inferior liquor).	5d	5½d	6d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor)	5½d	6d	6½d	6½d

Ceylon. The sale was again small, resulting in a strong market with occasional advances in Teas for price and medium grades, although a few of the higher grade Teas barely maintained late advanced rates. Averages:—"Carolina TC St. Margarets," 1/3½; "Newera Eliya TC Lovers Leap" and "Talawakelle," 1/1½. Avge. for week rather under 8½d., agst. rather under 8½d. last yar.

Ceylon Tea sold on Garden Account 1st January to date 1897, 891,599 pkgs., av. 7½d. 1896, 793,808 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6½d	6½d	7½d	7d
PEKOE (Ordinary leaf, little twist; fair liquor)	8d	8d	8½d	8½d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5½d	5d	6½d	6d
PEKOE (Somewhat bold leaf; indifferent liquor)	6½d	6d	7½d	6½d

Java. The small sale passed with spirit at full valuations.

SUPPLEMENT TO "PLANTING OPINION."

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9d.) October 15th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	151 p	7			10	6½	41½c	9 9¼	22	6¼ 7			13½c	8
Kodanaad	86 p	7½												
Springfield	65½c	5½	36½c	6	29½c	5¼								
Travancore	1714 p	6½												
BA	48	4¾									48	2½ 5		
Belford	73½c	6			51½c	5½	21½c	6¾					1½c	2½
Bonaccord	125 p	5½			46	5½	37	6¾	26	5			16 p	3½5¼
Carady Goody	34	6¼	7	7½	12	5½	10	7	3	5¼			2	3½
Great Valley	38½c	5½			22½c	5½	14½c	6¾					2½c	2½
Home	150½c	5½			83½c	5½	50½c	6¾			10½c	3½	7½c	3
"	90 p	5½			53½c	5½	32½c	6¾			2½c	4½	3	2½
Invercauld	97 p	6¼			52	6	25	7½ 8	16	5¼5½			4½c	3
Kinmylies	83½c	5½			68½c	6			11½c	5	2½c	4	2½c	2½
Mahandragherry	62½c	5½			50½c	6			8½c	5¼	2½c	4¼	2½c	2½
Merchiton	59 p	6		7½	17	6½	9½c	7½			19	5	4	4¼
"	46 p	6½	9½c	8¼	17	6½	10½c	8			9	5½	1	3½
P	7	2½									7	2½		
Perrindotty	55	5							30	5½	18	4¼	7	3 5
Poonmudi	89 p	6½			40	6½	23	7½	19	5½			7 p	3 6½

OTHER PRODUCTS.

The Chemist & Druggist of 16th ult. reports:—

CARDAMOMS.—At auction only 29 cases were offered. These met with a very strong demand, and although holders were firm, 17 packages sold at about 4d. advance, Ceylon-Mysore, fair, long and round mixed medium pale, 3s. 6d.; ditto, mixed sizes, brownish, partly split, 3s. per lb. For medium to bold bright Mysore, 4s. 9d. is asked; and for small to medium a bid of 4s. 2d. was refused. Tellicherry sold at from 3s. 2d. for small up to 4s. per lb. for good medium to bold brown, and for Seed 4s. per lb. is asked. The imports this week include 51 cases from Colombo per Java.

CINCHONIDINE is still extremely scarce. This week 8d. per oz. has been paid for small available parcels.

CINCHONA.—Seven catalogues, comprising 1,263 packages, were offered at auction on Tuesday. They were divided as follows:—

	Packages.	Packages.
	420 of which	337 were sold.
African cinchona	...	...
Ceylon cinchona	273	157
East Indian cinchona	235	170
Java cinchona	168	107
South American cinchona	361	92
	1,457	863

The anticipation that prices would be fully up to the limit of the Amsterdam sales was fully realised. In some instances, in fact, the Amsterdam unit was exceeded. The average unit realised by manufacturing bark may be put down at 1¼d. per lb.; but in some cases red barks realised comparatively much higher prices, on account of their cinchonidine-content. The following are the approximate quantities of bark acquired by various buyers:—

	Lbs.
Agents for the Mannheim and Amsterdam fact	67,830
Messrs. Howards & Sons	43,828
Agents for the Auerbach factory	34,710
Agents for the American factory	21,698
Agents for the Frankfort-on-Maine and Stuttgart factory	8,040
Agents for Paris factory	2,620
Agents for the Brunswick factory	80
Various buyers	13,311
Total quantity of bark sold	192,117
Bought in and withdrawn	42,490
Total quantity of bark offered	234,607

The prices realised were as follows:—Ceylon and E. I. barks: Ledgeriana, 4½d. to 7½d. per lb.; officinalis, 2½d. to 4¼d. per lb.; succirubra, 2½d. to 7½d. per lb.; hybrid, 3¼d. per lb. Java barks: hybrid, 7½d. to 7½d. per lb.; W. African succirubra quill and chips, 3½d. to 6¼d. per lb. South American bark: Soft Columbian, 4d. per lb.; yellow cultivated Bolivian quill, 5¼d. to 8½d. per lb. At auction to-day 29 cases red Java bark in Druggists quills were offered. The whole of this parcel has been lying in London since 1888, and might have lain perdu here for years to come yet, but for the recent rise in bark. The lot was in fine stout druggists' quills both long and short, and was valued variously at from 7d. to 1s. 4d. per lb. At auction, however, no bids at all were made, and the parcels were bought in at from 9d. to 1s. per lb. A parcel of 29 packages red E. I. bark was also bought in. Bold to medium druggists' quill, at 10d. to 1s. per lb. Dull to fair quilly chips were bought in at 6d. per lb. Of a parcel of 20 bales South American grey bark (Guayaquil) fair thin bright to dull rusty quill, 12 bales sold at 9d. to 10d. per lb. for fair quality. Fifty bags "Mossy Lima-bark" in pale dusty chips were bought in at 4d. per lb. Of 88 bales thin fair hard partly dark flat Bolivian Calisaya (nearly all damaged) the greater part found buyers at 9d. per lb. for sound, and from 4d. to 8d. per lb. for damaged quality. Nine bales fair Carthagena, slightly damaged, are held for 6d. per lb.

Since the last Amsterdam auctions several parcels of manufacturing bark have been sold in the market privately at advanced rates, as much as 7c. per unit per ½ kilo. having been paid. The shipments of cinchona-bark from Java show a not inconsiderable decline—viz:—

	1897	1896	1895	1894	1893
	Amst.	Amst.	Amst.	Amst.	Amst.
	lbs.	lbs.	lbs.	lbs.	lbs.
Jan. 1 to Aug. 31.	5,005,000	6,029,000	5,013,700	5,557,000	5,376,000
Month of Sept.	750,000	1,389,000	816,000	1,071,000	500,000
Total Jan. 1-Sept. 30.	5,755,000	7,418,000	5,829,000	6,625,000	5,876,000

JALAP.—It is pointed out that most of the root now seen in the market is of very small size, and the inference is that such quality would not be shipped if there were any bolder root left in Mexico. The stock in New York is said to be unusually small, and so far very little jalap has been sent from the primary shipping ports this season. At auction 39 bags unworked, partly dull and small mixed, partly good bright tubers were shown. The holders require 7d. per lb. for the best, and 6¼d. per lb. for slightly inferior lots, but there was no response.

KOLA sold fairly well at auction, seven packages fair bright washed West Indian realising from 7d. to 7¼d. per lb., while for mouldy kolas from 5¼d. to 6¼d. was paid. For ordinary African 3d. per lb. was refused, and for fair washed Grenada a bid of 5½d. per lb. was also rejected.

Christmas Cards.

A large and varied selection of Raphael Tuck's artistic Christmas Cards may be seen at ADDISON & Co.'s Stationery and Fancy Goods Stores, Mount Road, Madras. These Cards are of the very latest designs, and are very moderately priced.

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MOUNT ROAD, MADRAS.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, NOVEMBER 13, 1897.

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 19th November 1897.

S. E. Wynaad.

PUNDALUR, 10th November.—*Weather.*—Heavy rains on the 2nd, 3rd and 4th instant. Fine bright weather ever since. *Crop.*—Picking has begun, and the ryots are harvesting chamai; the price of grain is still high. *Plant-disease.*—The leaf-disease is disappearing. *Labour.*—Sufficient.

Coorg.

POLLI BETTA, 12th November.—*Weather.*—No rain since last report. Clear, chill days with east wind have alternated, with cloudy still and comparatively warmish days. Yesterday there was a mist over everything, and the day proved a cloudy one. *Crops.*—Gathering proceeding slowly. Crop not ripening up very fast. A lull in the picking in parts. *Plant-diseases.*—Some leaf-disease about, but coffee still looking up. *Public Health.*—On the whole fair.

KITES AND RAIN.

THE marvels of modern engineering never cease; each year brings with it fresh triumphs. But the path that leads to perfection is a long one, and each successive obstacle removed only discloses fresh hindrances that block the way to the goal. Yet the pathway is not impassable, and the powers of science grow with each rebuff, and in the end victory is hers. Thus it seems with the attempts in recent years to produce rain artificially. Despite elaborate trials, they have hitherto failed till quite recently, owing to the faulty methods adopted, *i.e.*, by the explosion of dynamite or gunpowder at high altitudes. Another way has been now discovered, and given to the world by Lieut.-Col. Baudoin in the *Bulletin de la Société des Agriculteurs de France*, and translated in the Journal of the Royal Agricultural Society of England by Sir John Thorold.

It seems to be a curious practice in Chinese India for the citizens in the plains to fly a large number of kites at regular seasons of the year in order to "propitiate the spirit of agriculture." Ridiculous superstition as it may seem, Col. Baudoin did not pass it over with the scorn it would apparently deserve. He noticed that this kite flying was usually followed by beneficial rains an appreciable time before the regular rainy season began, allowing early planting of their ricefields. This set him thinking. Now the configuration of the country is peculiar. French Cochinchina is the south-west of the Chinese Indian peninsula; Annam is the east. A chain of wooded mountains separates the peninsula into two parts. Annam, the eastern part, receives the N. E. monsoon from April to October, formed in the China Sea. The chain of wooded mountains does not allow the clouds to pass over, and the rain falls in Annam till the N. E. winds cease. French Cochinchina, to the west, suffers all this time from absolute drought, but its turn comes when the S. W. blows from October to April, when it gets all the rain, while Annam is absolutely dry. Very similar effects may be annually noted in South India on either side of the Western Ghats. Naturally the rains of either monsoon were greatest on and near the wooded chain of hills.

What the Chinese in the plains were really trying to do, though they knew it not, was to replace the distant mountains by their kites. And very effectual the substitute proved.

To explain this puzzle we must follow Col. Baudoin in his scientific disquisition into the ultimate causes of the above phenomena, which are electrical in their nature.

Round our globe there exists a current of electricity running from east to west. This is called the Great Earth Current. It escapes into the atmosphere by means of the clouds, which are formed by evaporation caused by the current whenever it finds moist points, such as the waves of the sea, or grass, wet with dew, on the earth. The evaporated moisture is in the form of tiny bubbles, which drift together by the action of the wind and form clouds. Thus clouds are always charged with electricity. These clouds float about hither and thither till they meet with conductors in the shape of mountains, or wooded plains (if the clouds are sufficiently low). These conductors draw off the electricity to the earth, and the water bubbles collapse, falling as rain. This is the theory. Now for a convincing laboratory experiment:—

"A glass tube of fine bore is filled with water and the point broken: the water falls in spherical drops. If the tube is placed in contact with the current of electricity generated by a plate-glass machine, the water no longer falls. It is changed into bubbles, and forms a cloud of fine vesicles which can be gathered on a sheet of paper. If the cloud thus formed is directed towards an upright conductor in contact with the earth, and furnished with point, the electricity which draws the cloud returns to the earth, and the water reforms, drops and falls to the ground. Tree produce the same effect."

Ampere's law regarding the formation of hail may be instanced as further explaining the conduct of clouds. Currents of the same direction attract one another, those of an opposite direction repel one another. Contrary currents of wind, one above the other, often exist in our atmosphere. Thus it is that clouds of a certain strata may be moving in an opposite or contrary direction to those above and below it. These clouds, which are all charged with electricity, exert a mutually repulsive action, which tends to raise the uppermost layer of clouds to a very considerable height. When of a certain height, the great fall in atmospheric pressure causes a tendency in part of the water of the uppermost clouds to evaporate. To effect this, it borrows the necessary heat from the remainder, thus so reducing its temperature that some of the water is converted into ice falling through the clouds below by its own weight.

From this theory of the formation of hail by electrical repulsion, we may draw the following practical conclusions:—

"By suppressing one or more intermediate clouds, we remove the cause of the elevation of the highest cloud towards the cooling space.

"By removing the cause, the effect disappears.

"To suppress one or more clouds, we have to withdraw their electricity to cause them to fall as rain. That is what our apparatus, 'the rain-maker,' will do."

The "rain-maker" is merely an apparatus to perform artificially what the mountains do naturally, or even improve on them, *i.e.*, to intercept passing clouds, withdrawing their electricity, and causing them to fall as rain. Such apparatus is to be found in the ordinary kite, or special modifications to suit special circumstances. In a country of great elevation, such as our own Western Ghats for example, it would be sufficient to fly a large kite to reach the clouds. For the plains, however very little above the level of the sea, a special *aërostatic* machine would be required, with sufficient ascensional power to allow of its lifting its cable, when there was no wind.

To test the above theory, certain important experiments have already been made, which we purpose quoting *verbatim*:—

"In 1876, at El Meridji on the frontier of Tunis, a great kite, 3 metres long by 2 metres broad (or 10 feet by 6½ feet), caused a fall of rain each time it was flown. El Meridji is a plateau 850 metres (2,790 feet) high, situated between two groups of mountains—the Bon Kedeia to the west and the Djebel Dyt to the south-east. The distance between the two ridges is about 30 kilometres (19 miles). The clouds pass from Bon Kedeia to Djebel Dyt, leaving the plateau of El Meridji without rain. According to the Arabs, it had not rained for five years. At the first trial a fine rain was obtained from a small cloud; at the second trial also. At the third trial the cloud attacked was turned

into rain, and two other clouds that had already passed gave up their electricity and watered several square kilometres with an abundant rain. The delighted Ouled Deredji sent the experimenters a horse as a present."

More recent experiments were made in 1893 and 1894. In the former year, thanks to the generous assistance of M. M. F. Dreyfus and Boissieu, trials were made at Paris. But Paris, being only 28 metres (92 feet) above the sea level, necessitated the construction of numerous kites capable of supporting a much heavier cable. The last one made was 5 metres long by 4 broad (or 16½ feet by 13 feet). It can reach a length of 2,000 metres (about 1¼ miles) in a strong wind, but not more.

On October 15th, 1894, at five in the evening, a very large cloud, estimated to be about 1,300 metres (4,260 feet) high, came in contact with the kite at Courbevoie. The cloud came down, forming a local fog in the shape of a reversed cone, while near the ground it partially turned to rain. As soon as the kite was lowered, the remainder of the cloud rose and the sky became as before."

As supplementary to the foregoing, it may be of interest to add that "A Monograph on the Mechanics and Equilibrium of Kites," written by the Professor of Meteorology, has just been published by the Weather Bureau of the United States Department of Agriculture at Washington..

* * * *

Thus runs Col. Baudoin's fascinating paper. The practical importance to India of the verification of his theories must strike the most casual reader as stupendous. To control the waste of waters that yearly descend in such fruitless abundance on the mountain ranges that bound the land, so that the most arid plains of Ind would be refreshed at seasonable times with grateful and life-giving showers to lift the curse of famine from the teeming populations of the land, that were a task worthy of the greatest and noblest. To effect such tremendous results, the simple, almost trivial, agency advocated by Col. Baudoin seems ludicrously impossible. Yet science has seen effects perhaps even greater produced by causes as simple.

As a not unimportant unit of the agricultural classes, the practical bearing that the subject has on the planting community is worthy of attention. Drought, long continued and severe, is happily of but rare occurrence. Yet, as the success of coffee plantations, for instance, depends so largely on the timely occurrence of the "blossom-showers," it can be readily recognised by our readers how valuable might prove in practice the French "rain-maker." Situated mostly at a considerable elevation above the sea, and in the direct line of the great march of the clouds, no elaborate apparatus would be required,—a large kite, some 10×6 feet, with twine or fine cord of sufficient strength and length to enable the kite to reach the passing clouds: this completes the outfit. The practical results? Ah, these are scarcely likely to rival in interest the fascination of the theory.

GENERAL NOTES AND ARTICLES.

A South Travancore planter writes Drought: coffee and tea. on the proposed experiments with tea in Mysore: "I fancy the droughts in Mysore will be against it as a tea-producing country. Tea, strange to say, suffers far more from drought down here than coffee does."

Cholera and planters.

The Indian Tea Association has, we understand, recently engaged the services of a Dr. Mulheim in introducing his cholera specific in the coolie depôts. The Doctor has accepted the moderate remuneration offered him, i.e., Rs.150 a month and all his travelling expenses for three months, and proceeds to Gauhati.

The watch as a compass.

It is often highly necessary, especially in the jungle, to be able to find out the points of the compass. Few carry compasses with them. Almost everyone wears a watch. Point the hour hand of the watch in the exact direction of the sun. Due South will be exactly between the hour indicated and 12 on the dial, no matter what the hour of the day may be. Thus if it is four o'clock by the watch, and the hour hand is pointed directly to the sun, due South will be in the direction indicated by the figure two on the dial.

Scientific planting.

Dr. Leather, Agricultural Chemist to the Government of India, has addressed the planters of Northern India through their representative body, the I. T. A., stating that his engagement was about to terminate, and enquiring whether it would be worth his while to commence practice as an Agricultural Chemist in connection with Tea, Indigo, &c. Unluckily, sufficient inducement could not be offered him at the present time, as there is "practically no work for an Agricultural Chemist." No work indeed! Rather should it be said that the necessity for such work is not recognised. Madras the Benighted will soon, we hope, give North India a lead, and a long one, in this matter.

COFFEE, TEA, AND CINCHONA.

THE following extracts from Mr. O'Connor's Trade Review of India in 1896-97 were crowded out of our last few issues, but will be useful for reference.—

COFFEE.

The exports have been as follows:—

	Cwt.		Cwt.
1887-88	273,773	1892-93	296,687
1888-89	365,299	1893-94	278,735
1889-90	239,795	1894-95	281,297
1890-91	233,451	1895-96	290,902
1891-92	311,864	1896-97	210,797

The exports fell to the lowest level known for many years, the result of a scanty crop. The estimates of the present crop are also unfortunately very unfavourable, and the crop of the present year will, it is anticipated, be much worse than that of last year. Brazil, on the other hand, is reported to have a splendid crop, so that the Indian planter will apparently not even have the consolation of high prices with his short crop. In the six years ending 1896-97 the exports of coffee have been on the average 278,380 cwt. annually, while in the five preceding years (1886-87 to 1890-91) the average was 296,555 cwts. The trade therefore does not expand, notwithstanding the encouragement given by the continuance of a high level of prices during the last eight or ten years. According to the figures obtained from the local Governments, the production (which is mainly confined to Mysore, Coorg and Madras) averaged 33·5 million pounds in the decade ending with 1895 and in the same period, the exports averaged 3299 million pounds. The quantity retained for local consumption may, therefore, if the figures of production are correct, be taken at about 580,000 pounds annually, or about 5,200 cwt.

TEA.

The exports of the year exceeded those of 1894-95 by about 8½ million pounds (totalling 148,908,000 lbs.), and the total quantity exported was more than twice as large as the quantity exported twelve years ago:—

1891-92 ... lbs.	120,149,000	1894-95 ... lbs.	129,099,000
1892-93	114,722,000	1895-96	137,710,000
1893-94	126,332,000	1896-97	148,908,000

An increase of 8½ million pounds in 1895-96 was followed last year by another increase of 11½ million pounds. It is estimated that the production of tea in the present year is from 8 to 9 million pounds in excess of the production of last year . . . The decline in prices which occurred in 1895-96 was followed by a further fall last year and prices approximated (except as regards the comparatively limited quantity of orange pekoe) to the range of prices of 1891-92.

The exports were distributed as follows in pounds (100's omitted):—

To	1895-95	1895-96	1896-97
United Kingdom	118,417	123,947	135,457
Australia	4,872	6,775	6,156
Persia	3,173	3,188	1,994
Turkey in Asia	1,396	1,356	1,981
United States	228	581	785
Canada	317	408	823
Russia in Asia	44	486	422

The bulk of the tea was as usual shipped to the United Kingdom, about 91 per cent. of the whole having been sent thither, an even larger proportion than in 1895-96 (90 per cent). The exports to Australia were not maintained on the level of 1895-96, and there was also a marked decline in the exports to Persia and Russia. The trade in tea with these two countries is chiefly carried on from Bombay, and the epidemic in that city sufficiently accounts for the reduction. As a set-off, it is satisfactory to note the continued success which has attended the efforts made by the Indian Tea Association to develop the trade with the United States and Canada, about 1,600,000 lbs. having been shipped thither last year. Both these countries also receive a fairly large quantity of Indian tea through the United Kingdom, the exports thence being:—

To	1895	1896
United States, lbs.	908,743	902,619
Canada	823,207	905,597

So that the total consumption in both countries now approximates to 3½ million pounds. There is, however, manifestly room for at least a tenfold expansion of the trade even now, with indefinite possibilities of further expansion hereafter, and doubtless the Indian Tea Association are alive to the expediency of continuing their efforts to promote the trade. Since 1884 the imports of Indian tea (into the English market) have more than doubled; the imports of Ceylon tea have reached nearly 95 million pounds from the small beginning of 1884, when coffee was being supplanted in the island by tea; and the imports of China tea are less than one-fourth what they were in 1884. It was confidently stated before the closure of the Indian Mints in 1893 that that event would enable China to recover her supremacy in the tea market, and the prediction has even been hazarded since by some very rash prophets (not, however, in India). These figures furnish a singularly conclusive refutation of such assertions. In 1884 China was sending to the English market more than twice as much tea as India and Ceylon combined: in 1896 India and Ceylon sent to England more than six times as much tea as China. And the decline in the importation of China tea has been as great and rapid since 1893 as before. Messrs. Gow, Wilson, and Stanton state that the consumption of tea in the United Kingdom in 1896 was: Indian 54 per cent., Ceylon 35 per cent., China 9 per cent., other kinds 2 per cent. The places of shipment of Indian tea are:

From	1894-95. lbs.	1895-96. lbs.	1896-97. lbs.
Bengal	123,000,733	130,495,190	143,235,822
Bombay	2,828,746	3,940,295	2,413,247
Sind	1,067,359	674,795	505,344
Madras	2,149,006	2,510,059	2,690,027
Burma	53,472	89,866	64,021
Total	129,099,316	137,710,205	148,908,461

There is also a small export from Travancore and Cochin. The considerable decline in Bombay was due, as already stated, to the epidemic of plague which dislocated business, while quarantine regulations in Russia treated even tea as a suspected or susceptible

article. Here it may be mentioned that the export of tea seed from Bengal, mainly to Ceylon, has been in the last two years as follows

	Cwt.	Rx.		Cwt.	Rx.
1895-96 ...	3,232	35,985	1896-97 ...	4,173	52,825

CINCHONA.

The trade in cinchona bark, which at one time seemed to present a brilliant prospect of development, has dwindled almost to vanishing point, the exports last year (321,478 lbs.) being less than a third of the trade of 1895-96 and less than a tenth of the trade of seven years ago. The cinchona tree is now in fact hardly grown except by the Government which manufactures all the bark produced into alkaloids and the sulphate of quinine for use in India. Planters who took up the cultivation, some fifteen or twenty years ago in the hope of making large profits have been greatly disappointed, and in most cases the trees have been uprooted to make way for tea or coffee. The trade will go on with fluctuations for some years to come perhaps, but there is no appearance now that it will assume any importance. It would seem that, at the present low level of prices for these drugs, the Indian bark cannot compete in Europe with bark from Peru or the countries where the tree is now grown, and that the bark we grow cannot be profitably used (unless there should be a radical change in existing conditions) except for manufacture for Indian consumption.

COFFEE.

Maragogipe hybrids.

A Nilgiri planter draws attention to the good effects of hybridisation

He writes: "I was much struck with the good outturn of last season's coffee from one of my places, and pleased with the large proportion of A. A. size. I attribute it to my having some years ago filled up the vacancies with Hybrid Maragogipe plants. The neighbouring plants seem to have been 'inoculated,' so to speak. I have a field of 5 acres of them just coming on. They are remarkably healthy and free from disease. There is no doubt about it: we have gone on too long planting Arabica, and the introduction of a fresh strain is desirable."

The Market.

At the Dutch sale, on Tuesday, prices showed a decided irregularity. The *P. M. Review* of 16th ultimo, the lower grade being from ½ to 1 per cent. cheaper, while the better one sold at a similar advance. Here there has been little change to note; the absence of fresh arrivals in any quantity makes it almost impossible to expect a large business, while the demand having shown a decided falling off has tended still further to make a quiet market. Little beyond Colombian has again been brought to auction, while the better qualities have fetched full or rather dearer rates, the lower one having sold at a slight decline. Privately, with the exception of a few sales of Costa Rica and East India, only a small business has been done. The reports of the next crop of the latter are so bad that some holders are not at all anxious to sell, feeling sure of a higher market even when the new crop begins to arrive. Mocha continues neglected.

COFFEE SHADE TREE.

Sun-dried *Erythrina lithosperma* loppings, &c., contain per ton:—

61.50 lbs. of Nitrogen, 57.38 lbs. of Potash, 14.92 lbs. of Lime, and 13.68 lbs. of Phosphoric Acid.

Orders should be booked early for the coming crop of seed from the parent trees of the above analysis at Rs. 6 per pound containing about 2,000 seeds. Germination guaranteed.

Only thornless variety extant, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE, SHENCOTTAH.

the stocks being too large for the limited trade that is done in this kind. In the terminal market there has been no new feature, but prices have tended downwards.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended Oct. 9, 1897.	Tons. 344	Tons. 283	Tons. 556	Tons. 298	Tons. 11,006	Tons. 8,816
For the 40 weeks ended Oct. 9, 1897.	11,045	11,330	17,316	16,887	...	...

OFFICIAL STATISTICS OF THE COFFEE TRADE OF THE UNITED KINGDOM.

	1 Month ended Sept. 30.			9 Months ended Sept. 30.		
	1895	1896	1897	1895	1896	1897
Imports	26,116	30,763	42,547	662,421	590,780	666,814
Home Consumption.	18,142	20,506	20,661	188,233	185,262	186,455
Exports	28,711	32,541	44,644	348,051	360,573	346,438
Total Deliveries	46,853	53,047	65,305	536,284	545,835	532,893
Stock on Sept. 30	205,909	169,458	287,548	...	...	...

ASSIMILABLE NITROGEN AND LEAF DISEASE.

THE following papers are in continuation of the series by "Nitrogen" published under this heading last year, to which we then gave deserved prominence. The delay in publishing this second part was due to the enforced absence of the author from India, due to severe illness. Regrettable though this break in continuity may be, yet the matter treated is of such vital importance to the industry that the subject has lost no jot of its original interest.

We may mention that the problem to be solved is the unravelling of the relations of the soil conditions to the presence of leaf disease in the plant, which unravelling in effect is a treatise on the most scientific cultivation of the shrub that has yet been attempted. We would ask our unscientific readers not to allow themselves to be scared by the more or less scientific language used. For the main facts of the arguments can be easily grasped by any one who studies the question with ordinary care.

In conclusion, we can safely assert that the conclusions arrived at have been proved in practice to be irresistibly sound.

Your issue of the 18th September last contains a letter by the pen of "M.," which strikes the key-note of a subject (in which I have already written in this paper) which was laid before Professor Dunstan. The subject, I mean, of the occurrence of leaf disease arising from either the extreme malformation of the Proteids in the coffee tree, or from the fact that the formation of these bodies within the plant (certainly when cropping) was not at a sufficient rate to both feed the plant and the seed. In other words, that the parent tree was drained in its system by a progeny which required some 10% to 15% of these valuable bodies to form themselves, that this drain of these extremely essential materials was going on throughout the tree, while the parent was unable to form them at sufficient pace to enable it to keep up its own health or strength.

Coffee soils difficult to form Nitric Acid.

In short, whether the tree was producing seed or not, it was able to be shown by analyses of coffee soils from four districts, a distinct peculiarity in their inability to form Nitric Acid—a digestible nitrogen which should have then formed for the plant its Proteids, caused by interesting lack of soil oxidation.

Proteid or Nitrogen bodies largely absent in diseased coffee trees.

It was able by analysis to point out the great want of these soluble, and therefore active, Nitrogen bodies in the diseased plant, that these materials which form such a large proportion of the whole tree were at least four times more absent in the diseased to the healthy tree, and yet they must be essentially the strength-givers to vegetation.

Nitric Acid artificially given can completely cure disease.

Further, it was pointed out that the application artificially of that Nitric Acid to these soils, so slow themselves in forming it naturally, had the power of keeping off disease absolutely—not partially.

The following were also pointed out:—

(1) That disease distinctly seemed traceable as coming on those soils least able to form Nitric Acid, and once come, hung longest to those soils slowest to form it afresh.

(2) That in the wet season, and also in the very dry season, precisely the two times of the year when Nitric Acid would be least at the roots, disease was worst.

(3) That three symptoms of vegetation poor in Nitrogen attended the tree before and during disease attack.

(4) Last, yet hardly least, that the coffee tree had to withstand a drain on itself of a crop which was composed of some 15% or more nitrogenous bodies.

The exceedingly high lack of oxidation of the soils, and therefore the non or poor formation of Nitric Acid within them, was noted by the Professor, and the ensuing lack of Nitrogen bodies in the diseased tree was noted also, and on questioning me whether giving that Nitric Acid to the plant disease was cured or kept off, the answer was able to be given that it was possible to keep it off entirely with it, under conditions, but that those several conditions were so often wanting that it made results exceedingly variable, but the quite complete cure for a whole year and more to an estate (even bearing 5 cwt. per acre) was effected by giving this in the form of Nitrate of Soda alone. May I say that Professor Dunstan on seeing these very effective analyses of the soils wished me to see Professor Voelcker on the subject. I now regret that time at that moment prevented my doing so.

Theory and practice.

If those foregoing four points enumerated are correct (and I am sure they can each be followed out and proved so), i.e., that the time when Nitric Acid is least present at the roots is the time for leaf-disease appearance—that it is traceable as appearing worst on those soils least able to form it, and also that there are three symptoms in the plant one cannot associate with vegetation rich in nitrogen, then it makes the analysis of the diseased plant and of the soils bearing out this lack of Nitrogen, in their own particular way, the more interesting,—the practical bearing out the theoretical—also perhaps it is not sufficient to see on analyses a lack of or even a big lack of Nitrogen in the soil and diseased plant as totally proving the case. One wants to see or have it backed up in other ways, and it makes one question why this Nitric Acid placed on the soils artificially has such very varying results. These varying results, sometimes a complete failure, I do not wish to refer here to, except to say that the good result must inevitably much depend on the good or better amount of oxidation of these low oxide soils—also in suitable conditions of rainfall after application, but other things must come in also to spoil or at any rate minify the good chances of Nitrate of Soda or of Potash or other organic Nitrogen application, but especially this low form of soil oxidation must mitigate against the success, as can be proved—success nearly proportionate to soil oxidation, it is thought, whether forced or natural oxidation.

Nitric Acid the only source practically of coffee tree's Nitrogen.

I am convinced, Mr. Editor, that coffee to-day has one continual struggle for its Nitrogen (whatever was the case in former days, and on this matter Professor Oliver will not, I think, object to publishing an interesting letter to me closely bearing on this subject), but it is possible to show how extremely difficult, how exceptionally averse these soils are to

present this Nitrogen to the plant as Nitric Acid, and yet this oxidation of organic matter in the soils causing that formation of this assimilable Nitrogen (Nitric Acid) will be acknowledged the source of the coffee tree's nutrition in nitrogen, without going into any arguments about coffee taking its Nitrogen elsewhere (by ammonia through leaves or by the 5 lbs. Nitrogen per acre by rainfall or by what happens in *open healthy soils, i.e., ammonia of air entering and attaching itself to the various bases to form nitrates*); but accepting organic matter as the source for the coffee tree's Nitrogen, yet, not till it has received that oxidation to decay it and form this Nitric Acid. This is the important point: organic matter as food is useless till oxidised and Nitric Acid produced.

Coffee tree needing more active soil than jungle growth.

This soil aversion, however, is felt by only one of the points which produces this lack of Proteids although a strong one, since the extremely limited sphere of action of the coffee roots, feeding on such a small area, will immediately suggest to one that a far more active soil in forming its soluble foods is required than the forest trees whose roots ramify to great distances and great depths, where a slow-acting, even acid soil, is sufficiently rapid for them. But here in coffee, especially where these tropical downpours have to be reckoned with, taking down most rapidly this slow-forming Nitric Acid below this surface feeder, it will be admitted a rapid oxidation of organic matter is incomparably more necessary for such a feeder than jungle growth, and again if the coffee should happen to be in the open and not under shade, a still further again more active soil would be required to keep pace in the freeing of its constituents on account of the extra draught upon it caused by the much enhanced quicker growth. This is found in practice to be so by the increased amount of tillage, etc., and the more necessity or necessity of quick-acting manures on estates in the open over those under shade. Where tropical rains attack a soil in so thoroughly carrying this fugitive Nitric Acid below the roots, it is I think obviously a necessity that this organic matter should again rapidly form this, and the more heavy and more continued the rainfall, then the more necessity for a soil in a more rapid state of decay; in other words oxidation. This, however, can be shown, I think, as not the case—the heavy organic matter soils of the wet districts seem far the least capable of forming it, notwithstanding their large reserve of Nitrogen.

Soil activity or oxidation.

It will admittedly be that a soil having six times the amount of oxygen passing through it has practically six times the fertility of another soil (of something of the same composition) which has not this oxygen passing through it, *i.e., six times the amount of mineral and organic foods are set free by this acid*. In the laboratory, Hydrochloric Acid may be formed on to a soil and certain constituents *pulled out* (unnaturally) from the insoluble portions of the soil and one, by that analysis, is able to say that there are so many tons of Phosphoric Acid per acre, so many tons of Potash, etc., etc., per acre in a one-foot soil which only require oxygen (this acid which in nature takes the place of Hydrochloric Acid in the laboratory) to pour through the soil as rapidly as possible and free these as plant food, *i.e., decay the soil in its mineral matters and organic, that pulled out by Hydrochloric representing more a part of that enormous soil reserve than that which is actually ready as plant food*.

Analyses of coffee soils proving difficulty of oxidation or activity.

One *does* require to know, therefore, are these constituents being freed by the action of oxygen, or is the soil lying in an inert state? Analyses are able to be produced from the various coffee districts which strongly go into this matter of soil oxidation—into this life of the soil—into its naturally freeing itself and becoming active by means of oxygen, and they prove that they have the very greatest difficulty to perform this soil duty even when the soils are given the most exceptional and unnatural opportunities to do so.

Lack of oxidation, more effect on Nitric Acid than mineral matter.

It effects the mineral matters of course seriously, but cannot touch the ill-effects the lack of oxidation has on soil Nitric Acid. This lack of oxidation (1) prevents it forming; (2) may also dispel it; (3) and further actually aid its loss in rainfall, and yet this is the assimilable nitrogen of coffee which should have gone to form the Proteids! Reasons given with analyses for the three ways this lack of oxygen illy affects Nitric Acid.

Noticeable fact in Nature. Lack of oxidation by wet, causing distress, disenable tree with stand drought.

Notice how on the coffee soils where water on flattish land, especially if in a basin, giving an extra lack of oxygen (since water fills the soil pores) and therefore lack of Nitric Acid—this wet place is the first to feel drought, and yet Nitric Acid if it had been there would have been THE THING to have pulled it through the drought—this power of Nitrogen keeping vegetation moist and in growth in dry weather every one knows, but there is one case in point, the extra lack of oxygen having those hindering influences on Nitric Acid. This lack of oxydation according to these detailed analyses runs through the coffee soils of S. India at any rate, extremely strongly, but that case of a thoroughly wet soil is an exaggerated case in not having this Nitric Acid, but still these analyses are capable of showing the extremest and interesting lack of oxidation and therefore of Nitric Acid when it is afforded to them in an unnatural way in quantity to them; yet oxygen must be the life of this Nitric Acid and preserver of it also, too.

Difficulty of oxidation observable in Nature.

But this difficulty of these soils to oxidise is observable, too, in Nature, if the length of time some of these yellow ferrous silicates turned up from a sub-soil or from a cutting take to turn to their red or ferric state. Admittedly I think this change in colour often needs months, but it bears out precisely what analyses of these soils are also able to show in a very strong way, and then this reflects in an adverse manner on the foods, organic and mineral set free, but far most chiefly on the essential Nitric Acid which it affects in so many ways. State of sub-soils must have a great deal to say to the non-reappearance of Nitric Acid after rainfall has carried it below the roots, but returning to the point both analysis and nature are able to point out the length of time and quantity of air it is necessary to pour on a coffee soil before oxidation takes place, and through the kindness of a planter friend I wish to bring certain analyses forward later to prove the points.

I should like to bring forward here two soils—one where naturally everything went to promote oxidation, the other where everything went against it, and notice the results.

Entire prevention of disease a whole year with 2 oz. only Nitrate of Soda. Estate formerly victim of disease.

The first one, the healthy one, is that briefly alluded to before the complete stoppage of disease by application of Nitric Acid in the simple form of Nitrate of Soda. Two ounces only of this Nitric and Soda were given to each tree, and the trees were carrying a 4 cwt. to 5 cwt. crop, yet with that simple manure and small dose, there was not, I think, a trace of disease throughout the estate, where formerly this estate had had these annual and periodic visitations of Hemeleia Vastatrix, as the manager remarked "eaten up" with leaf disease. This application of manure, however, had a remarkable power of lasting and preserving a healthy, vigorous and nitrogenous look upon those trees decidedly over a year, and allowed those trees not only to mature all their crop, but placed on a large healthy wood growth for the ensuing season.

It is interesting to notice also that on that part of the estate where a higher oxidation was forced upon that soil by means of a previous application of Carbonate of Lime, the effect of that Nitrate of Soda application outlived the rest of the estate by some three or four months, showing therefore that where a higher soil oxidation is procured, then the soil has much better retaining powers for this Nitric Acid in these tropical rains, or in that other precarious time for Nitric Acid, *i.e., prolonged dry weather*.

Exceptional oxidation of soil.

The soil of this especial estate is one which cannot be called like the run of the ordinary coffee soils of some of the other districts or even of some of this. Fairly light in organic matter, but in the surface soil there is a large admixture of sand with the clay, giving it in that way an enormous help to an extra aeration. In the sub-soil it is a mass of large and also minute stones, showing more stone than soil and coming up to within a short distance of the

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surface soil, exactly the very soil therefore by this extra natural drainage which gave it better health and condition, giving it precisely what was wanted for a Nitrate application. It should be again remarked that this soil seemed to have exceptional natural facilities for drainage, therefore oxidation, therefore stronger powers of retention. On taking up the surface soil, this organic matter, &c., seemed exceptionally rich in sand, and there was a large sprinkling of stones throughout the surface soil.

Porous sub-soil. The sub-soil is nothing but a mass of stones of various sizes. While referring again to the surface soil, as the owner remarked, there is not a place over the whole estate that the actual surface soil has more than a foot and a half of depth, generally a foot, before it is met by what might be called sub-soil; in other words, a far still larger mass of stones. I am certain if this soil were analysed, a far higher state of oxidation and health and therefore retaining Nitric Acid power would be found existing in this soil.

It is true that this estate before shade was planted suffered severely from drought, but this is not the point, the point being that such a small application of Nitrates on this healthier soil *entirely* prevented, and especially so on that part of the estate where a further oxidation was forced upon the soil by means of Lime Carbonate.

Nitrate of Soda less used on un-healthy soil. Here is a case, therefore, in which, giving to a soil that Nitric Acid, it failed to form (in any quantity) naturally, that disease is entirely kept off, but every planter in using Nitrates or a quick-acting organic manure has noticed the same power of averting and even curing disease by this means, but it must be maintained that *health* of the soil before a Nitrate application has enormously (almost everything) to do with the success or non-success in averting or curing disease.

Not the least interesting part is it to notice that where that higher oxidation was enabled by the use of Lime Carbonate at a previous period, there this Nitrate had best and most lasting effect.

I am able to vouch that where these points have been looked to, *i.e.*, the helping of these somewhat obstinate soils, in the formation of their oxides and Nitrates, (in other words oxidation and nitrification,) by means of really frequent tillage and drainage, and also in giving frequent applications of a rapidly Nitric-giving manure, *then* the results may be seen to be rather over $\frac{1}{2}$ ton per acre off the whole estate in a succession of three years at *least*. But with all this, bearing the great point to be observed, is that leaf disease is non-existent. While again on a certain twelve-acre stock considerably over this amount has been produced—one year 17 cwts. per acre. [To reassure doubting spirits, we (Editor) are authorised to state that all genuine enquiries will be welcomed, and chapter and verse given for the above statements.—Ed.] followed up the next year by 11 cwts. per acre, and yet with that drain upon the plant of this crop, the block is to all intents and purposes free of disease. Although attention is given to mineral constituents, the chief aim is in giving this Nitrogen in assimilable form and placing the soil into a condition capable of better retaining this fugitive Nitric Acid, for on the better health of a soil must depend its greater retaining powers.

A Mysore soil least able to form Nitric Acid. I do not wish to more than just touch on a soil here, far the most interesting of the lot which were analysed, which exhibited the strangest reluctance to form this assimilable nitrogen. Interesting as the others were in showing a distinct perversity to perform this soil duty, a Mysore soil outstripped the others in its difficulty to form this constituent in both the amount and also rate the others could do it in, notwithstanding it had some 23% of organic matter and combined in that organic matter some 540% Nitrogen, an amount of the latter equalling some 30,000 lbs. Nitrogen per 18-inch soil per acre.

Wet district need-active soil. The importance or absolute necessity, (certainly for a surface feeder) will be recognised of a soil situated in a district with the heaviest of tropical rains, of rapidly forming this valuable but fugitive Nitric Acid again. For after it has been so completely successfully taken below the roots, quicker to is felt by these inches of rain a day than could possibly allow the roots of vegetation a chance to appropriate it, then a soil *must* or should (it is distinctly obvious) be able to form its organic matter rapidly in the short spells of fine weather which that district may get and once more give a chance to vegetation to renew itself, which either its own growth or influence of seed upon that vegetation will require its presence in the plant.

Above soil believed typical.

This highly organic matter soil of Mysore, I believe, is thoroughly typical of such soils pertaining to wet district. As often as not it is a noticeable fact, I think, that very high soils very rich in organic matter are more generally found where there is heavy rainfall, and especially often happen to overlay clays (*i.e.*, the oxidation or decay of organic matter on an open sandy soil takes place quicker on soil with extra good drainage). But to cut short any arguments here, for it is useless to discuss it at length without analysis, there was the strongest of evidences that this soil, notwithstanding its large amount of organic matter, was the soil far the least able to form its assimilable Nitrogen. While the other soils, much poorer in organic matter, which showed a far greater porosity, were quickly able to recuperate themselves after wet weather, and afford to plant life that necessity of necessities: Nitric Acid. Having such large amounts of organic matter, Nitrogen has nothing to do with the case; but if (as Storer it is I think says) a soil's fertility can be almost reckoned by its amount of Nitrogen, this fertility must depend (1) on the amount of reserve Nitrogen at soil's back, (2) on the rate the soil is able to form Nitric Acid, (3) or the power of its retaining it in wet weather.

Bacteria effects. I have already gone further than intended on this soil's peculiarities, but must state that if the destruction, oxidation, or decay of organic matter had been going on by the work of the soil bacteria, these, emanating from the bodies of these bacteria as the result of their feeding upon this organic matter, *should* be found Nitric and Carbonic Acids. Yet, although this heavy humus soil one would naturally expect to show *most* of these decay products because of its large amounts of organic matter, it is really the one to show them *least*! While the healthier open Pulney soil shows that these bacteria are far more busy.

Cause and effect shown in soil. Further, the reason why this important work is not going on in the soil is also shown in its analysis. Firstly, its high organic matter gave it actually ten times the water-holding power of some of the other soils. Secondly, and partly by the result of its high water-holding powers, it had large quantities of low oxides of iron. Useful as a soil is which is capable of holding water, yet when it is held to excess, hindering by its means the access of oxygen to the soil (and especially if this organic matter is associated with much low iron oxides like the Mysore one), then it is obvious how a soil can be most seriously hindered from working. The details of this analysis show both cause and effect.

Suspicious of Soluble Ferrous Sulphate. I will go further than this about this soil and state that this soil with these very high amounts of organic matter and high amounts of low iron oxides and high water-holding power showed by these every suspicion that decay, destruction, oxidation, or whatever one calls it, was being arrested by the presence of an antiseptic or preservative Sulphate of Iron (Ferrous Sulphate),—a very soluble low oxide salt of iron, which causes acidity, as this soil showed.

Injurious effect in Nitric Acid and Bacteria. This very soluble salt, because of its solubility (and therefore power of being carried from surface soils to lower soils and lower soils to surface soils according to state of weather) would mean death to bacteria, death to formation of Nitric Acid, and death to what little Nitric Acid forms.

I am aware one must not over-state the case, but say that the strongest suspicions exist for saying traces, perhaps faint traces, of this objectionable salt were apparent. It is a pity it was not analysed I feel every confidence that a soil so high in organic matter, so high in low iron oxides, so high in water-holding power would have shown this as existing.

One knows how this very same salt which is here suggested as present in this Mysore soil, and many others is usefully used in cholera and other disease-infected places to kill on soils bacteria or germs of disease; this I believe will be often found present in the coffee soils, as then *very frequent* acidity suggests, especially so the lying ill-drained ones under heavy shade, unable to relieve themselves at any

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rate quickly of their excess moisture. It may be risky to say so, but I believe full 90% of the heavy organic matter soils will be found with traces of acidity showing at any rate lack of oxidation and therefore non-presence or poor presence of Nitric Acid, a soil slow acting like this and holding such quantities of water, eminently suited for jungle growth but scarcely suitable (till a quicker oxidation takes place) for a shrub like coffee, feeding on a surface soil and in a very limited area of food.

Finally, I do not wish to say that many of the coffee soils even have this soluble ferrous sulphate, although five out of seven analysed soils from the various districts showed acidity. Because so much must depend for its formation on configuration of land, depth of organic matter, depth of sub-soil from surface, porosity of surface and sub-soil especially, whether near much water or in a wet district or one with much humidity in atmosphere. But I do wish to insist that there is generally extreme perversity of the coffee soils of S. India at least to form and also preserve Nitric Acid. I regret being so emphatic on this. But when one knows how very reluctant, or actually stubborn, such soils have shown themselves even when artificially aerated in a way soil would never actually be subjected to in nature, and also when one is able to perceive in nature after three or four days heavy rain, a plant loses all semblance of a nitrogenous look about it within a fortnight of that fall, *then I do feel*, with that nature showing it, with those analyses most strongly proving it, it is allowable to be emphatic on the Nitric Acid powers of a soil, that is to say in the way it can form and retain it.

Voelcker as witness.

It will be noticed in Professor Voelcker's analysis of three Munjerabad soils that fertility is dependant on the *proportion* the ferrous is to ferric; in other words, practically speaking, the rate and amount of oxygen which is pouring through the soil again; in other words, the rate Nitric Acid is formed, and what must inevitably follow, the power it has of being retained in the soil by this better oxidation.

The chain of argument.

The chain of argument seems to me complete in every way. Even without recourse to analysis of the diseased plant to show this lack of nitrogen, and without recourse to the soils to demonstrate its absence there also, we can see from Nature herself: (1) That Nitric Acid under certain, perhaps exceptional, conditions can stove off and even wipe out leaf-disease. (2) That the three precursory symptoms of disease are purely and solely non-nitrogenous ones. (3) That the disease is traceable as belonging to those soils which one may safely prejudge as being poor in the formation of Nitric Acid. (4) That disease appears at those two very times of the year when Nitric Acid is least appropriable by the roots—i.e., extremes in dry or wet weather.

I signed myself in a previous communication on this subject as "Nitrogen," but here give what I feel is a truer nom-de-plume, i.e.,

NITRIC ACID.

(To be continued.)

TEA.

American consumption of tea.

After a long period of stagnation in the *per capita* consumption of tea in the United States, we are greatly pleased to note that during the year ending 30th June 1897 a very satisfactory improvement was noticeable. The consumption was 112,900,000, showing an increase of 19½ millions over 1896, or nearly 20%.

South Indian statistics.

We observe that Messrs. Gow, Wilson and Stanton have written to the Indian Tea Association, pointing out that the crop estimates furnished by this body did not include figures from Travancore and Nilgiris. They stated that it would be an advantage to the trade generally if estimates and figures for the whole of India could be given. The I. T. A. have addressed the Central Travancore Association on this matter.

In their Monthly Report, dated London, 15th October 1897, Messrs. Arbuthnot and Co. write:—

South Indians.

There was a considerable decrease in the quantity catalogued compared with August, only 1,601 pkgs. having passed the hammer *versus* 5,131 pkgs., though the average was the same, viz., 6½d. per lb. The Travancores offered were, as a rule, of rather indifferent quality, and some of the results were in consequence poor. Where, however, planters had been able to send teas with colory liquor, there was good bidding and quotations were more satisfactory, among the best shipments being those from Arnakel, Balamore and Teafield. Arrivals from the other districts were unimportant, and call for no special notice.

The Market.

INDIANS.—Although the supply has been larger than in the preceding weeks, writes the *P. M. Review* of 16th October, the market has shown a decidedly firmer tendency, and occasional advances have been established. The teas most affected are the lower and good medium descriptions, especially the former, which have in many cases advanced ¼d. The supply of clean sweet Teas is very limited under 5½d., and at present there does not appear to be any probability of its increasing. The medium grades are also difficult to obtain at former prices. The trade are taking them freely at current rates, especially the Sylhet and Dooars teas, which now show useful quality. So long as there is no further upward movement in values, a good business will no doubt continue, as prices appear to be on a safe level to hold good working stocks. The next higher descriptions, ranging between 9d. and 1s., show no material change, as there is an ample supply to meet the prevailing demand, although the quality generally is not up to the earlier standard, Assam kinds particularly being deficient in this respect, while most of the Darjeeling growths show a falling off as compared with those offered a week or two ago. The finest kinds are not so plentifully offered as formerly, consequently values are firm and somewhat higher. At the public sales 53,156 packages were brought forward, of which 5,950 were withdrawn. The bidding was active for all good descriptions, and the market closed generally firm.

CEYLONS.—The continued scarcity in the supply of Ceylon teas keeps prices at a high level, and in no instance has there been any decline from last week's rates, while a further advance was in many cases noticeable, more particularly in the good medium kinds. Fine and common teas are equally in request and a strong demand prevails, the bidding having been very active for the small quantities available at the sales. The public auctions comprised 16,893 packages, nearly all of which were disposed of at firm to higher rates. Shipments from Colombo to the United Kingdom to the 21st September were 72,561,369 lbs., as against 68,251,012 lbs. during the same period last year.

CENTRAL HOTEL,

INFANTRY ROAD, BANGALORE.

(Under English Management.)

The most comfortable and convenient for visitors.

TERMS MODERATE.

DISTRICT ASSOCIATIONS.

SHEVAROY.

PROCEEDINGS of the Annual General Meeting of the Shevaroy Planters' Association, held in the Victoria Rooms, Yercaud, on Monday, October 4th, 1897, at 1 P.M. PRESENT:—Messrs. S. M. Hight, W. W. Hight, C. D. Ricketts, T. B. Nicholson, W. Rahm, Dickins, E. H. King-Harman, Revs. J. M. Kempf, M. Andersen, Messrs. S. M. Pritchard, S. Campbell, R. Gompertz, C. Ram, Junr., C. Iarge, C. Dickins, C. G. Lechler (*Chairman*), H. W. Leeming (*Honorary Secretary*).

1. Notice calling the Meeting was taken as read.

2. Read and recorded, for future reference, correspondence re the proposal to charge a commission on Currency Notes presented for cashment at the Yercaud Sub-Treasury.

3. Read letter, dated 29th September, 1897, from Mr. C. D. Ricketts, complaining that one of his cases had been struck off the file of the Second Class Magistrate's Court at Yercaud without his knowledge.

Resolved "that this, also complaints from Messrs. King-Harman, Leeming, T. B. Nicholson, and the Rev. M. Andersen, as well as any others, should be sent in, in writing, to the Honorary Secretary, to be forwarded to the Collector of the District."

4. Read letter, dated September 20th, 1897, from the Secretary, U.P.A.S.I., asking what sum this Association is prepared to subscribe towards defraying the salary of an Agricultural Chemist, &c.

Resolved "that the Honorary Secretary be requested to circulate this letter, and to ascertain the amount Members are willing to contribute towards the above, as well as the number of analyses they will require for a period of three or five years."

5. Confirmation, or otherwise of the Committee's Proceedings for the past quarter.

The Meeting, unanimously, approved of the above.

6. The Honorary Secretary then brought forward the Annual Report and accounts as follows:—

R. CHAIRMAN AND GENTLEMEN,

I have the pleasure to lay before you my third Annual Report and accounts. From the latter you will observe that the year closes with a credit balance of Rs.176 to the Police Reward Fund and of Rs.450-15-9 to general account [besides a sum of over Rs.800 remitted by us to the Reserve Fund of the U.P.A.S.I.], after deducting the arrears in subscriptions amounting to Rs.30, as well as Rs.65, which will have to be paid to the Forest Department when the Bamboo Pass Books, in issue, are returned. Under these circumstances, it would be quite feasible to reduce the subscriptions by 50% and yet leave more than enough for all practical purposes. However, I should not, personally, recommend such a course, as the number of Members may vary at any time, and it would not be expedient to lower the rates for the present only to raise them on some future occasion. The rapid strides in Agricultural Science render it imperative that Planters should keep abreast of new times, and this can only be done by their having ready access to some of the more important works on the subject. For this purpose, I would suggest that any surplus should be devoted towards purchasing Books, Pamphlets, &c., with a view to forming the nucleus of a Planting Library. I, also, think that, when funds allow, exhaustive analyses of soils from various parts of the Shevaroy should be undertaken at the expense of the Association for the benefit of its Members. The state of the Finances can be considered satisfactory when it is noted that the expenditure, under some heads, has increased—that for Postage being one of the principal items. The rule hitherto has been to circulate the Proceedings, &c., by the Peon; but owing to the larger number of members and to the great distances apart at which many live, I have found it absolutely impossible to continue the former arrangement and have been obliged to adopt the method of sending notices, &c., by Post—which, besides expediting business, ensures Members receiving communications about the same time, and thus enables all to have

ample leisure to think over the various points that are to be discussed before a meeting is held. The Peon, however, has his time fully occupied in taking round the Subscription Book and Papers each month. The year commenced with 29 and closes with 35 Ordinary and 4 Honorary Members [*viz.*:—The Collector, the Superintendent of Police, the Forest Officer and the Executive Engineer of the Salem District]. During this period 13 joined and 7 have resigned without stating any reasons for so doing—six out of this number being members of one family and the seventh a Superintendent in their employ. This, I think you will agree, is a course to be much regretted, as it might, in the eyes of the Public, cast some stigma on the Committee and the Honorary Secretary, who have, I assure you, had the interests of each individual Member at heart, and who have been only too glad to receive fair and open criticism as well as any suggestions that might increase the usefulness and popularity of the Association.

The past year has witnessed some changes in the internal economy of the Association. The old system of Committee Meetings each month has been re-introduced with the improvement of a Quarterly instead of an Annual General Meeting of Members. Judging from the attendance at all meetings, and the way in which business has been accelerated, it cannot be doubted that the departure has proved entirely beneficial. On the initiative of Mr. C. G. Lechler, the first dinner of the Shevaroy Planters took place about the middle of October last, and its success has caused it to become an annual occurrence. Another novelty has been that of the quarterly breakfasts which were started in hopes of drawing Planters together and getting them to take a more friendly interest in each other's work, so that eventually it may be possible to regulate wages, advances, cost of contract works, &c., to a certain extent—these being points that most certainly should and could be agreed upon to the satisfaction and lasting benefit of the whole community.

Through the courtesy of the Deputy Tahsildar, who has regularly favoured me with a notice stating the days on which the kutcherry would be open each month, I have been enabled to circulate this information to all Members, and I trust it has been found a boon, especially by those who live some miles from the Station.

It will be unnecessary for me to do more than touch upon a few of the important matters of business transacted during the past year. The idea of trying to establish a Coffee Association, under the control of the U.P.A.S.I., somewhat on the same lines as the Indian Tea Association, in order to increase the consumption of Indian Coffee by advertising, &c., has been allowed to stand over for the present, as it was thought inexpedient to push the matter further in view of the efforts now being made by a large number of Planters to mitigate the very serious injury being done by Green Bug, and also to procure the services of an Agricultural Chemist to check and to prevent, if possible, the ravages caused by Leaf Disease. This project, however, will not be lost sight of when the time is ripe to bring it forward again.

A Special Meeting was held in January last to start, with the help and sanction of Government, a Fund for the construction and repair of all Public Roads and Rights-of-way other than those which are already kept up by the District and Taluk Boards. The object is purely one of self-help, and though Government did not accept our proposals in their entirety, we were referred to the Collector who, I am convinced, will assist us with funds wherever practicable, and I think our hearty thanks are due to this gentleman (Mr. H. C. Mounsey) for the interest that he has taken in the matter. Since this question has passed into his hands, the inordinate and vexatious delays have become a thing of the past; and any "Road Needs" of Planters up here have only to be brought to his notice to receive prompt and careful consideration from him. However, if pecuniary assistance cannot always be given, we must accept the inevitable, as my experience on the District Board has shown me that there are many demands of the same nature from the various Taluqs.

We have no doubt been indirectly affected by the Plague and Famine, though happily this part of the country has escaped both these calamities, which have caused an unusually heavy drain on the resources of Government, so that funds for the construction of the Shevaroy Bandy Ghaut Road have not been available. Still we are confident that H. E. The Governor has not lost sight of our needs, and that the Road will be *au fait accompli* when finances allow, as the

Survey for the same has already been commenced by the Public Works Department.

Through Mr. Robert Gompertz' able advocacy, Yercaud has at last been constituted into a Union under the direct management of the Salem District Board and, even during its short period of existence, the roads have been considerably improved, and doubtless the sanitation of the place will be taken in hand before long.

It is needless for me to comment upon the Proceedings of the U.P.A.S.I., as a full report of the Annual Meeting has so recently appeared in the papers.

Though less in number than before, there are still a few Planters who seem unable to realize that union is strength, and urge, as their excuse for not joining the local Association, that little good would accrue to them by becoming Members thereof, as nothing definite is accomplished. To all such objectors on the Shevaroy, and they are not many I am glad to say, I would mention that the Association is primarily intended to safeguard the interests of the whole planting community and not to be continually effecting startling results.

The opening of the Government Forest Reserves, the privilege that Members enjoy of issuing their own Bamboo Passes, the starting of the Yercaud Rifle Volunteer Corps, the opening of the Telegraph Office and the formation of Yercaud into a Union may all be mentioned as some results of its labours, and the U.P.A.S.I. is but the outcome of the union of District Associations. It must also be borne in mind that requests and complaints through the Association must carry far more weight with Government and its officials than communications from private individuals.

In conclusion, Gentlemen, I place my resignation as Honorary Secretary in your hands, and do not intend to seek re-election as I am shortly proceeding to England. I thank you all for the hearty support you have always accorded me, and I lay down my office with the hope that my efforts on your behalf have met with your approval.

HERBERT W. LEEMING, *Honorary Secretary.*

Resolved (i) "That the Accounts and Annual Report be adopted, printed and circulated to all Residents on these Hills." (ii) "That a hearty vote of thanks be accorded to Mr. Leeming for his able conduct as Honorary Secretary."

7. Before the Meeting proceeded to elect Office-Bearers,

The Rev. M. Andersen *proposed*, and Mr. Leeming *seconded*, an amendment, "that a Permanent Chairman other than the Honorary Secretary should be elected for the coming year."

Carried with 2 Dissentients.

It was also *resolved* "that the sum of Rs. 15 per mensem be allotted towards the salary of a Writer to be at the disposal of the Honorary Secretary."

The following Committee was then elected for the ensuing year:—

Mr. C. G. Lechler, Mr. R. Gompertz, Mr. C. Rahm, Junr., Mr. J. G. Large, Mr. S. M. Hight, Rev. M. Andersen, Rev. J. M. Kempf, Mr. C. Sice, Mr. H. W. Leeming, with Mr. C. G. Lechler as Permanent Chairman and Mr. R. Gompertz as Honorary Secretary in the place of Mr. Leeming, who did not seek re-election owing to his proceeding to England shortly.

With a vote of thanks to the Chair the Meeting terminated.

C. G. LECHLER, *Chairman.*

HERBERT W. LEEMING, *Honorary Secretary.*

PROCEEDINGS of the Monthly Committee Meeting of the Shevaroy Planters' Association, held in the Victoria Rooms, Yercaud, on Monday, October 4th, 1897, at 10 A.M. PRESENT:—Messrs. R. Gompertz, Rahm, Junr., W. W. Hight, Revs. M. Andersen, J. M. Kempf, Messrs. C. G. Lechler (*Chairman*), H. W. Leeming (*Honorary Secretary*).

Notice calling the Meeting was taken as read.

Read and Recorded, for disposal at the General Meeting to be held to-day, correspondence *re* the proposal to charge a commission on Currency Notes presented for encashment at the Yercaud Sub-Treasury.

Read letter from Mr. C. D. Ricketts, dated September 29th, 1897, complaining that one of his cases had been struck off the file of the 2nd Class Magistrate's Court at Yercaud without his knowledge.

Resolved "that the matter be laid before the General Meeting to be held to-day."

Read and Recorded Circular, dated 15th September 1897, from Secretary, U. P. A. S. I., *re* Reserve Fund Circular, dated 13th September 1897, from Secretary, U. P. A. S. I., *re* North Wynad Planters' Association; Circular, dated 15th September 1897, from Secretary, U. P. A. S. I., *re* Finances.

Read and Recorded with satisfaction, letter No. 5058, dated 29th September 1897, from the Collector of the District *re* Roads of the Shevaroy.

Read and Recorded, for disposal at the General Meeting to be held to-day, letter dated 20th September 1897, from the Secretary, U. P. A. S. I., asking what sum this Association is prepared to subscribe towards defraying the salary of an Agricultural Chemist, &c.

The following Papers were laid on the Table:—(i) *Planting Opinion* for September 11th, 18th, 25th and October 2nd, 1897. (ii) *Agricultural Ledger*, No. 8 of 1897. (iii) *Proceedings of Board of Revenue*, No. 6785, dated 24th August 1897, *re* Carrot Seed. (iv) *Proceedings of the Lower Pulneys Planters' Association*. *Proceedings of the Wynad Planters' Association.*

With a vote of thanks to the Chair the Meeting terminated.

C. G. LECHLER, *Chairman.*

HERBERT W. LEEMING, *Hon. Secy.*

E. DRAPER,

GRANDSON OF THE LATE

W. DRAPER.

ESTABLISHED 1838.

WATCH, CLOCK AND MUSICAL

REED INSTRUMENT REPAIRER,

NO. 31, BROADWAY, MADRAS.

PER-PHOSPHODINE,

A SAFE, PROMPT AND RELIABLE

PHOSPHORIC REMEDY

FOR

NEURALGIA, Nervousness, Lassitude, Overwork, Brain, Nervous and General Debility, Failure of Memory, Dimness of Sight, Depression of Spirits, Impoverished Blood, Liver Complaints, &c.

This is a stable and reliable solution of Free Phosphorus (Unoxidised Phosphorus) combined with Iron, Quinine and Strychnine. It is thus a valuable and highly efficient combination of nerve tonics, and will be found admirably adapted to the treatment of all ailments which have their origin in nervous exhaustion.

It will also be found very useful in convalescence from fever and other debilitating diseases.

CERTIFICATE. "I honestly believe the Per-Phosphodine sold by E. PLOMER & Co., to be about the best patent medicine offered to the Indian Public."

Rs. 4 per Bottle, packing charge annas 4, extra.

E. PLOMER & CO.

CHEMISTS, &c.,

LAHORE, PUNJAB

Christmas Cards.

A large and varied selection of Raphael Tuck's artistic Christmas Cards may be seen at ADDISON & Co.'s Stationery and Fancy Goods Stores, Mount Road, Madras. These Cards are of the very latest designs, and are very moderately priced.

Any description of PRIVATE CHRISTMAS CARDS made to order. ADDISON & Co.'s facilities for manufacturing Fancy Cards of special shapes and designs are unequalled in Madras.

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Crests and mottoes, Address dies, business dies, carefully and correctly engraved and stamping neatly executed in any colour. Copper-plates for visiting cards engraved at short notice.

At Home Cards, Dinner Invitation Cards, Menu Cards, Ball Programmes, Pencils and Tassels, and any description of Society Printing.

STATIONERY AND FANCY GOODS in immense variety.

A large stock of articles suitable for Christmas Presents.

ADDISON & CO.,

***Stationers and Fancy Goods Merchants, General
Printers, Engravers, and Die Stampers,***

MOUNT ROAD, MADRAS.

MARKET SUPPLEMENT.

SATURDAY, NOVEMBER 13, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (October 22, 1897) says:—A quiet tone has prevailed at auctions this week, and the small supplies brought forward sold slowly; desirable kinds, however, realised fully previous rates.

No East India was offered.

The Central American catalogued consisted chiefly of common descriptions which met a slow demand at unchanged prices, but bold color grades went all against the buyer.

Owing to the continuance of the heavy Brazilian receipts, the Terme market has again declined, and quotations at the close are 1/- lower than last week.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending October 20th, 1897, says:—Bank rate 3%. Bombay Exchange closes at 1s 3½d. Brazil Exchange 7½d. Rupee paper 3½% 63½. Silver 27½d per oz.

This market has been dull throughout the past week, and the small supplies catalogued have only partly been sold at about steady prices for good, whilst the ordinary and common kinds are again cheaper. Brazil markets are flat.

Daily receipts in Brazil have averaged 12,625 bags in Rio and 25,625 bags in Santos.

Futures are dull and lower, closing about 1s below last week's quotations, viz.:—Good average Santos in Havre, December delivery, fcs. 40.75, in Hamburg pf. 33½, and No. 7 low ordinary Rio in New York \$6.25.

To-day's London official quotations are:—

	Oct.	Dec.	March	May	July	Sept.
Rio	—	32/6	—	—	—	—
SANTOS	33/-	33/3	33/9	34/-	34/3	34/6
We quote:—						
Ceylon, mid. to good mid.	102/	@106/	Costa Rica, mid. to fine...	84/	@110/	
Do. small to low mid.	79/	101/	Do. ord. to low middling.	62/	83/	
East India, mid. to good	90/	103/	Jamaica, good to fine ord.	54/	70/	
Do. small to low mid.	72/	89/	Do. greenish to fine	—	—	
Guatemala, mid. to fine...	83/	106/	colory...	75/	125/	
Do. good ord. to low	62/	83/	African	30/	33/	
Salvador, good ord. foxy	57/	58/	Columbian, ordinary	46/	52/	
greenish...	57/	58/	Do. good ord. to	—	—	
			low mid...	53/	82/	
			Do. mid. to fine	82/	106/	

Receipts in Brazil to 19th Oct. compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
Rio	1,753,000	1,346,000	987,000
SANTOS	3,069,000	2,259,000	1,523,000
	4,822,000	3,605,000	2,510,000

Movements of Tea in United Kingdom from 1st June to 30th Sept., as shown by Custom House Returns.

	IMPORTS.			HOME CONSUMPTION.			EXPORTS.		
	1897.	1896.	1895.	1897.	1896.	1895.	1897.	1896.	1895.
BRITISH E. INDIES	45,229,218	42,474,744	41,912,439	38,556,868	35,425,392	34,136,486	1,339,421	982,415	1,143,724
CEYLON	36,171,454	35,848,256	31,843,825	32,264,150	30,057,421	28,820,711	3,452,758	2,719,275	2,627,342
CHINA	15,699,330	18,666,774	21,968,446	5,443,604	6,613,993	8,074,565	7,544,545	6,055,533	5,941,261
OTHER COUNTRIES	2,065,440	2,328,792	2,950,354	1,619,286	2,190,948	1,621,340	442,683	364,519	401,386
TOTAL lbs.	99,165,442	99,318,566	98,675,064	77,884,008	74,287,754	72,653,102	12,779,407	10,121,742	10,113,713

Analysis of above export of Tea from U. K. during the last two years (not including transhipments).

	INDIAN.		CEYLON.		CHINA.		OTHER COUNTRIES.	
	1897.	1896.	1897.	1896.	1897.	1896.	1897.	1896.
COUNTRIES IN EUROPE	727,820	389,295	2,148,682	1,635,399	5,193,418	3,588,187	317,927	253,258
UNITED STATES	190,847	127,153	531,213	326,967	630,336	214,408	16,712	30,736
BRITISH N. AMERICA	112,197	216,604	340,696	403,128	337,926	859,397	5,637	23,164
OTHER COUNTRIES	308,557	249,363	432,167	353,781	1,382,865	1,393,541	102,407	57,361
TOTAL lbs.	1,339,421	982,415	3,452,758	2,719,275	7,544,545	6,055,533	442,683	364,519

Auctions:—

13 casks and tierces 21 barrels and bags Plantation

Ceylon	...	@ 96/6	@ 105/
1,686 bags Columbian, chiefly sold	...	65/6	102/
1,311 bags Guatemala, part sold	...	42/	97/
518 bags Salvador, part sold	...	52/	58/
565 bags Nicaragua, part sold.	...	42/	94/
290 bags Mexican, part sold	...	49/	61/
517 bags Vera Paz and Coban, part sold	...	76/6	95/
277 bags Costa Rica, bought in.	...	—	—
295 bags Venezuelan bought in.	...	—	—
101 bags Guayaquil, part sold	...	47/6	—
100 bags Bahia, part sold	...	27/6	—
31 bags Penang Liberian	...	37/	42/
66 bags Java Liberian bought in.	...	—	—
15 barrels Jamaica bought in.	...	—	—
8 bags Central American, 4 bags Peruvian	...	35/	—
717 bags washed Santos, small part sold	...	48/	55/

On Quay Terms:—

1,940 bags Santos, small part sold	...	30/	37/
Landed last week	462 tons.	Deliveries	763 tons.
Do. last year	254	Do.	735
		Stock	10,705 tons.
		Do. last year	8,335

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated October 22nd, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	527,860 packages.	520,408 packages.	17,589 packages.
1896-1897...	524,904	466,300	20,196
54,522 pkgs. INDIAN	Total 66,340 packages were offered in public auction this week.		
20,108 " CEYLON			
710 " JAVA			

Indian. The quantity brought forward was rather smaller, the market all round being well supported at last week's prices, except that here and there one or two of the less desirable liquoring parcels sold at slightly cheaper rates. The quality of the crop generally is about up to the average, both Assam and Darjeeling in particular being of a satisfactory character. The Official Wire gives exports to U. K. for first half of the month as 8,790,000 lbs. against 9,200,000 lbs. last year, and the total from 1st April as 77,840,000 lbs. against 77,230,000 lbs. last year.

SUPPLEMENT TO "PLANTING OPINION."

Week's av. of Tea sold on Garden Account, 1897, 31,775 pkgs.,
av. 9d. 1896, 27,280 pkgs., av. 9d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	...14,083 p 10½	15,003 p 9½	187,815 p 11½	171,432 p 10½
Cachar and Sylhet.	9,591 p 7½	6,480 p 8	92,844 p 6½	83,106 p 7½
Chittagong	... 425 p 7½	—	2,073 p 6½	947 p 7
Chota Nagpore	... —	115 p 4½	356 p 5	675 p 6
Darjeeling	... 1,956 p 1/-	2,407 p 1/0½	33,013 p 11½	31,200 p 11½
Doors	... 4,137 p 8	2,831 p 7½	48,716 p 7½	45,657 p 7½
Kangra, &c.	... 352 p 7½	192 p 6½	3,730 p 7½	1,196 p 6½
Neilgherry	... 138 p 6½	—	2,808 p 7	1,092 p 7
Terai	... 1,042 p 7½	95 p 6½	10,435 p 7½	4,168 p 7½
Travancore	... 51 p 4½	157 p 6½	4,358 p 6½	10,744 p 7½

Total sold on Garden Account 1st June to date 1897, 377,444 pkgs.,
av. 9½d. 1896, 350,217 pkgs., av. 9½d.

Comparative prices of Indian Tea in London :—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	... 3½d	4½d	4½d	4½d
FANNINGS. (Red to brown, strong rough liquor)	... 4½d	4½d	5d	4½d
BROKEN TEA. (Brownish to blackish, strong liquor)	... 6½d	6½d	6½d	6½d
PEK. SOUG. (Blackish greyish, useful liquor)	... 6½d	6½d	7½d	7½d
PEKOE. (Greyish to blackish, some tip, useful liquor)	... 7½d	8d	8d	9½d

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9d.) October 22nd.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	... 138 p	6½	...	...	15	7½	17p	8 9½	19	6½	11	6½	9½c	8½
Kodanaad	... 71 p	7½	...	...	...	...	...	...	67	5½	...	...	...	...
Tudor Hall	... 67	5½	...	...	...	...	...	...	...	...	...	...	...	...
Travancore	... 51 p	4½	...	...	...	...	...	...	20	4½	...	...	...	...
M	... 20	4½	...	...	...	...	...	...	...	...	...	...	...	...
Rockwood	... 31½c	5½	...	...	31½c	5½	...	...	...	...	...	...	...	...

OTHER PRODUCTS.

The Chemist & Druggist of 23rd October reports :—

CARDAMOMS.—The latest mail reports from Ceylon state that the demand for cardamoms for Bombay continues to be very strong. Parcels of Mysore pods have changed hands at prices ranging from 2'12r. to 2'50r. per lb., and Malabar is selling for the same market at from 1'70r. to 1'80 per lb. Business with the European market was almost at a standstill in both these grades. Closing prices ranged from 2r. to 2'05r. The London market is extremely firm. There has been an arrival of between 50 and 60 cases, but this will no doubt find ready buyers, although it is probably limited at high figures. For common Malabar cardamoms, such as generally sell at about 1s. 5d. per lb., 3s. 1d. per lb., c.i.f. terms, is asked, and bills of 2s. 8d. per lb., c.i.f., have been refused.

CINCHONA.—The Amsterdam cinchona auctions of November 4 will consist of 5,691 bales and 437 cases, representing a total of 555,810 kilos. of bark. Of this quantity 521,997 kilos. are bark from private plantations, and 33,813 kilos. from the Government gardens. The first-hand stock in Amsterdam on October 12 consisted of only 2,040 packages of Government and 5,778 packages of private bark. This includes the quantity to be offered for auction. The shipments from Ceylon, from January 1 to September 21, are as follows :—

1897.	1896.	1895.	1894.
Lbs.	Lbs.	Lbs.	Lbs.
526,093	881,743	733,288	2,181,459

	1897.	1896.	1895.	1894.
PEK. SOUG. (Blackish greyish, inferior liquor).	5d	5½d	5½d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor)	... 5½d	6d	6½d	6½d

Ceylon. The auction was again comparatively small, while the strong demand of the past few weeks was fully maintained, causing the market to be very steady at the recent advance. Private telegraphic advice gives exports to U. K. for first half of the month as 2,100,000 lbs., against 3,500,000 lbs. same time last year, and estimates the total for the month as 4,500,000 lbs., against 6,750,000 lbs. last year. Avge. for week 8½d., against rather under 8½d. same period last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 906,996 pkgs., av. 7½d. 1896, 814,053 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London :—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	... 6½d	6½d	7½d	7½d
PEKOE (Ordinary leaf, little twist; fair liquor)	... 8d	8d	8½d	8½d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	... 5½d	5d	6½d	6d
PEKOE (Somewhat bold leaf; indifferent liquor)	... 6½d	5½d	7d	6½d

Java. The few Javas brought forward sold with good competition at rather dearer rates. 108 pkgs. from "Perbawatee" brought 11½d. per lb. 5,030 pkgs. were offered in Amsterdam on the 20th last.

JALAP.—From New York it is reported, under date of October 5, that there have been no arrivals, that there has been an improved demand, and that 33 bales have been sold at 9c. per lb. In London 7d. per lb. is asked.

QUININE.—Last week the market closed quietly, with second-hand sellers of B. & S. and Brunswick bulk quinine at 1s. 2½d. per oz., but on Saturday a small parcel of new B. & S. quinine is said to have been sold at 1s. 3d. per oz. This week the demand has been slack, and some second holders have shown much anxiety to sell. We only hear of one sale of 5,000 oz. early in the week at 1s. 2½d. per oz. for new German bulk (second-hand). To-day there are sellers at 1s. 2½d., but no buyers over 1s. 2d. per oz. Pelletier's brand is quoted by the makers at 1s. 4½d. to 1s. 5d. per oz. in vials. The New York market during the week ending October 9 is thus described by the O. P. & D. Reporter :—"During the week the demand has been rather active, the makers being full of orders. Dealers are selling cautiously, preferring to hold back. The cost to import from London is over 30c. Sales have been made here in 1,000 oz. lots at 30c., but earlier in the week large sales were made at 27c. to 28c. perhaps 40,000 oz., the bulk for shipment to London against sales made there.

Pepper is easier all round. Black Singapore has been dealt in on the spot at 3½d. to 3¾d., and close with sellers of October-December and November-January delivery at 4d. per lb.; fair black Atchin realized 3½d. at auction. White pepper is also lower. At auction fair Singapore realized 6½d. per lb., and for delivery prices are also lower. The same applies to Penang pepper.

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w.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, NOVEMBER 20, 1897.

[No. 34.]

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IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORT.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 26th November 1897.

Nellampathy (British). 17th November.—*Weather.*—Rain for fortnight, 1·8; to date, 160·54. The days have been very 'muggy' until Sunday, when some rain fell and has cleared the air a bit. *Crops.*—On almost all estates pulping is progressing and on one place I hear crop is nearly over. *Plant-diseases.*—"Leaf" still bad in young clearings, but almost all gone from old coffee, and places are looking well. Grub and wire worm are at work on clearings however. *Health.*—Good.

SULPHATE OF AMMONIA AND NITRATE OF SODA.

WHETHER well-founded or not, there undoubtedly exists a strong prejudice in agricultural circles in favour of applying the requisite nitrogen in the form of nitrate of soda, rather than in that of sulphate of ammonia. The producers of the latter valuable fertiliser are trying to combat this impression, for it has had, and still has, a serious effect in limiting the demand for their product. As is the case with

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ADVERTISEMENTS.—From the 1st October, 1897, the charge for fine advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "*Planting Opinion*," Esplanade Row, Madras.

basic slag (Thomas' phosphate powder), sulphate of ammonia has become a most valuable by-product of blast-furnaces, and ironmasters have recently opened a campaign setting forth the merits of their wares. All they seek to do just now is to establish the parity in the manurial value of the nitrogen units in both nitrate of soda and sulphate of ammonia. Mr. F. J. R. Carulla, F.C.S., Chairman of the Nottingham Section of the Society of Chemical Industry, has written an instructive pamphlet on the subject, which has been issued by the Iron and Steel Institute.

We learn that until quite recently there was no question of the equal value of the unit of the rival fertilizers, $\frac{3}{4}$ cwt. of sulphate being acknowledged of equal fertilizing power to 1 cwt. of nitrate, or to be perfectly safe, that 4 cwt. of the former equalled 5 of the latter. This is explainable by their relative percentages of nitrogen, sulphate of ammonia containing nearly $21\frac{1}{4}\%$ nitrogen, while nitrate of soda only contains $16\frac{1}{2}\%$ per cent. Now, however, since the blast furnaces have materially increased the supply of the sulphate, it is held that weight for weight the two fertilizers are of equal value, the balance being in favour of the nitrate. What are the reasons for such a change of opinion? Mr. Carulla can only answer "Prejudice, instilled by the nitrate producers."

Among one of the means recommended to remove this prejudice, it is suggested that sulphate of ammonia should be re-christened, so as to convey the same idea of nitrogen as nitrate does. "Nitrogenous sulphate" would be an excellent term to employ for this purpose.

A more serious method is to enquire into, and publish, the results of comparative experiments made with the two fertilizers. The literature on the subject is extremely slight, we are told, the most important being that contributed by Professor Paul Wagner, the well-known German *savant*, Director of the Darmstadt Agricultural Research Station. In his work on "The Increase of the Produce of the Soil through the Rational Use of Nitrogenous Manures,"* some tables of his comparative experiments on the effect of manuring with nitrogenous sulphate and nitrate of soda, he says, † "In my researches, which were carried out with grass, oats, rye, buckwheat and rape, usually no considerable difference between the effect of ammonia and that of nitrate showed itself, if the manure was applied in spring, and immediately before the sowing, to a clayey soil which contained a small quantity of carbonate of lime. In several series of experiments, the effects of ammoniacal nitrogen was fully equal to that of nitric nitrogen, as the following examples will show:—

Manure Nitrogen per acre in lbs.	Yields of Rye.		Grass.		Buckwheat.	
	Nitric Nitrogen.	Amm. Nitrogen.	Nitric Nitrogen.	Amm. Nitrogen.	Nitric Nitrogen.	Amm. Nitrogen.
18	43.1	47.4	...	...	35.9	37.2
27	50	51.7	...	...	41.8	39.7
36	56.4	55.6	15	15.7	45.7	45.6
45	58.1	58.2	17	16.9	46.1	48.4
54	62.8	61.6	17.5	18.4	51.8	53.3
63	...	...	18.7	19.3	...	...
72	...	...	20.6	20.8	...	...
0	38.0		7.6		31.5	
Average	54.1	54.9	17.8	18.2	42.3	42.8

To prevent any misconception, it may be again pointed out that sulphate of ammonia containing a larger percentage of nitrogen than nitrate of soda, proportionately smaller quantities of the former were used in the above experiments.

Whatever difference there is between the comparative results lies in favour of the nitrogenous sulphate, i.e., ammoniacal nitrogen.

In conclusion Mr. Carulla quotes the following example of the extreme unfairness with which facts may be presented so as to injure sulphate of ammonia—possibly without any real intention to do so:—

* "Some experiments which I carried out with winter rye gave the following numbers as the averages of four closely agreeing parallel experiments.

"Every 10 lbs. of nitrogen as compared with no manure gave the following increase in the crop:—

	Grain.	Straw.	Grain and Straw.
	lbs.	lbs.	lbs.
1. No nitrogen in autumn, all the nitrogen given in the spring in the form of nitrate of soda	215	729	954
2. All the nitrogen given in autumn in the form of sulphate of ammonia, no nitrogen in spring	41	169	210
3. The smaller part of the nitrogen given in autumn in the form of ammonia salt, the larger part in spring as nitrate of soda	145	575	720
4. The smaller part of the nitrogen given in autumn in the form of nitrate of soda, the larger part in spring, also as nitrate of soda	156	594	750

Our pamphleteer waxes indignant over the unfavourable position sulphate of ammonia occupies in the above table to the eye of the casual reader. And with justice. For, as he says, the fact that, in the first case, the nitrogen from the nitrate of soda was given the plants at the most favourable period, and that the opposite was the case with the sulphate of ammonia, will avail little in the long run. The majority of readers will simply remember the good

* London, Whittaker, 1888.

† *Op-cit.* P. 63.

* Wagner, "Nitrogenous Manures," page 38.

effect produced by the nitrate of soda and the failure of the other manure.

Yet, in spite of all that Mr. Carulla has advanced, there is no doubt that the action of sulphate of ammonia and nitrate of soda are by no means precisely similar, the former being better held up in soils than the latter. While on the other hand, nitrates have been found to act in a quicker period than sulphates. In many instances, the former quality may be more desirable than the latter, but again, in other instances, nitrates might rightly be preferred.

GENERAL NOTES AND ARTICLES.

Cattle trespass. We direct the attention of all Nilgiri planters to the N. P. A. Honorary Secretary's letter under this heading. As Mr. Windle points out, all that a Nilgiri planter need do in future, when suffering from cattle trespass, is to complain against the owner or keeper of the cattle to the Magistrate, not to the Police. The amount of the fine leviable is up to Rs.50, and it may be recovered by the sale of the trespassing animals, whether caught in the act of trespass or otherwise. We trust this will effectually settle the great annoyance and loss suffered from cattle trespass in this district. It would be an excellent thing were similar provisions applied to all planting districts of South India.

Notice to correspondents. We desire to draw the prominent attention of our correspondents to the fact notified on the first page of every issue some months past, that letters for publication alone should be sent to our Editorial Office at Coonoor. All communications bearing on advertisements (being orders for insertions or answers to advertisers) and subscriptions should be sent to the Manager of this paper, 3, Esplanade Row, Madras. Much delay and annoyance will be saved on both sides if this very simple rule is observed.

Another point that our correspondents might keep in mind is that letters unauthenticated by the name and address of the writers are summarily consigned to our Waste Paper Basket, however impersonal the subject treated on may be.

The Wynaad and the Planting Industry of Southern India, by FRANCIS FORD, Re. 1.

The Planting Directory of South India, Re. 1-8.
Tea Planting from Seed to Cup in Tamil, with English Translation. Re. 1.

Sketch History of the Planting History of Wynaad, by the late ADOLPHUS ARTHUR WRIGHT. Re. 1-8.

Science and Coffee, by the late MR. WM. PRINGLE, M.S.C.I., Re. 1-8.

Report of Observations of Injurious Insects and common Crop Pests during the year 1883, with methods of Prevention and Remedy, by Miss ELEANOR A. ORMEROD, F.R.Met.Soc., &c., Re. 1-8.

Apply to

"PLANTING OPINION" OFFICE,
3, ESPLANADE ROW, MADRAS.

Jadoo.

"Jadoo Limited" has not of late obtruded itself on our notice, but has been pursuing the business tenour of its way in successful, if uneventful, success. From the report of the second ordinary general meeting of the shareholders at Exeter on October 20th, we learn that the financial result of the year's trading enabled them to recommend the payment of a dividend at the rate of ten per cent. on the amount for the time being paid on the shares. The steadily increasing sales of Jadoo would, without anything else, justify the Directors in expressing their belief that the Company is on the road to a great success, but the report of the Committee on results of using Jadoo in France pointed to the probability of the rapid fulfilment of the hopes expressed in the prospectus issued in January last. The fact that the Silver Medal of the "Societe Agricole et Viticole de la Charente" was given to a Vineyard, almost entirely grown in Jadoo, as the best plantation of young vines in the whole Charente district, was a most extraordinary success to have gained in the first year that Jadoo had been experimented with there, and results with vines elsewhere had been equally satisfactory. The fibre was also favourably reported upon from tobacco-growing countries and from Australia, while from India the Directors had had reports as to the very satisfactory results obtained with using Jadoo for growing tea. According to a report from the Sathgao estate, Sylhet, the difference between the number of plants brought to maturity when using Jadoo mixed with earth was 68.8 per cent. and 68.7 per cent., against 21.4 per cent. and 39.5 per cent., respectively, in earth alone; and experiments made by the Agri-Horticultural Society of India proved that tea seeds germinated in ten days in Jadoo, as against 37 days in earth.

LETTERS TO THE EDITOR.

WORMS IN COFFEE ROOTS.

SIR,—I shall be obliged if you or some experienced planter can give me a cure for a pest which I find is playing havoc among my last year's clearings. Since the S. W. Monsoon stopped, in a certain ridge in the estate, the plants, which were remarkably fine ones for their age, have been drooping, and in some cases died altogether for no apparent reason. I had the pits opened out and the earth sifted, to find in every case one or two long, thin, reddish worms—by 'thin' I mean about as thick or a little thicker than a pin—in the region of the roots, and the plant itself had lost all its tiny feeding roots, while the main root was pulpy and peeled an inch below the surface of the ground and right down to the tap root. I had the earth in the pits of plants that were looking all right also sifted out, but found no worm of this description in them. I hope this will not be left unanswered as so many queries in the paper are.

"YOUNG PLANTER."

Advertisers are notified to send all advertisement matter and answers to advertisements direct to Manager, this paper, 3, Esplanade Row, Madras.

Correspondence and matter for publication to be sent to Editor, this paper, Coonoor.

RAINFALL STATISTICS:

COONOR, NILGIRIS.

SIR,—The following statistics may be of interest to your readers:—

	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877
January	20	10	65	40	...	85	45	50	05	1	21	...	215	61	625	454	154	39	377	...
February	...	105	55	50	115	80	25	115	...	110	...	40	145	25	...	...	145	94	...	...
March	75	...	45	22 65	110	75	30	340	10	3	150	60	05	39	33	527	...	247	130	...
April	...	14 85	25	165	640	520	895	550	255	670	60	190	125	151	280	...	280	240	498	...
May	2090	175	270	315	320	4	41	420	440	190	515	315	3	508	420	2	264	183	536	...
June	370	260	135	410	390	120	512	305	165	385	245	715	125	105	305	165	282	212	180	...
July	175	295	90	440	215	185	40	225	125	105	3	145	155	267	336	152	71	487	420	...
August	290	355	420	165	530	325	450	205	75	425	635	320	2	484	454	395	254	160	335	...
September	1120	399	170	255	180	280	245	755	675	140	705	760	175	115	340	275	148	308	356	...
October	990	1325	1065	1470	625	4415	810	960	1465	1610	8	1070	1880	17	1096	589	1117	1560	548	...
November	1020	530	805	2140	370	450	650	575	1468	670	528	965	1070	1510	1503	1493	1723	888	1086	...
December	860	295	370	30	290	760	585	405	115	1050	305	1232	415	705	65	218	611	113	1295	...
Total	5210	5234	4315	8645	3785	8595	5832	4985	4998	5755	4264	5812	5310	5670	5457	4468	5050	4521	5764	7332

The average for the first 10 years of the record is 53.95 inches, and for the succeeding 10 years 57.35, an appreciable increase. Unluckily the increase is accounted for by two extra heavy years 1891 and 1893. The most remarkable falls are in 1891, when

44.15 inches fell in October; in 1893, when 22.65 inches fell in March, an usually very dry month; in 1895, when 14.85 fell in April, a fairly dry month; and lastly, in 1896, when 20.90 inches fell in May, an also rather dry month.

YOUR COONOR CORRESPONDENT.

CATTLE TRESPASS.

SIR,—In a letter, dated November 13th, the Collector of the Nilgiris requests that I will give the "utmost possible publicity" to his exposition, copy of which I enclose, of the effect of the recent Notification of Government, No. 315, dated 18th August 1897, published at page 1077, *Port St. George Gazette*, of 24th August. I shall be obliged, therefore, if you will publish the enclosed in *Planting Opinion*.

E. G. WINDLE, Hon. Secy.

NOTIFICATION.

Ootacamund, August 18, 1897.

No. 315.—In exercise of the powers conferred by section 26 of the Cattle Trespass Act, [1871, as amended by Act I. of 1891, and in supersession of Notification No. 431, dated

* The definition of cattle includes elephants, camels, buffaloes, horses, ponies, mules, asses, pigs, sheep and goats. 19th November 1891, published in the *Port St. George Gazette* of 24th November 1891, His Excellency the Governor in Council is pleased to direct that in the Nilgiri district section 26 of the Act shall be read as if it had reference to cattle* generally instead of to pigs only, and as if the words "Fifty rupees" were substituted for the words "Ten rupees."

And under the provisions of section 12 of the said Act, and in supersession of the above notification, His Excellency the Governor in Council is pleased to direct that on every head of cattle which may be seized or impounded within the local areas mentioned below in the said district, poundkeepers shall levy fines at double the rates specified in the above section, viz.:—

1. Ootacamund	...	...	...	Double the rates of fines within municipal limits.
2. Kandal	...	...	...	
3. Coonoor	...	...	...	
4. Kotagiri	...	...	...	
5. Karteri	...	...	...	
6. Musnigudi	...	...	...	
7. Naduvattam	...	...	...	
8. Upper Gudalur	...	...	...	
9. Lower Gudalur	...	...	...	
10. Pandalur	...	...	...	Double the rates of fines within a radius of 3 miles from the pound.
11. Nellakotta	...	...	...	
12. Yedupulli	...	...	...	
13. Denad	...	...	...	
14. Thatapallam	...	...	...	
15. Konakarai	...	...	...	
16. Manjakombe	...	...	...	
17. Sholar	...	...	...	
18. Mukkatti	...	...	...	
19. Sakkatha	...	...	...	

J. F. PRICE,
Chief Secretary.

Under Sec. 26 of above Act, as extended by notification:—

"Any owner or keeper of cattle who through neglect or otherwise damages, or causes or permits to be damaged, any land or any crop or produce of land, or any public road, by allowing such cattle to trespass thereon, shall on conviction before a Magistrate be punished with fine not exceeding Fifty rupees."

All therefore a planter who suffers such damage has to do in future is to ascertain the name of the owner or keeper of the cattle, and complain against him to a Magistrate, not to the Police. And sec. 25 enacts that any fine thus imposed may be recovered by sale of all or any of the cattle by which the trespass was committed, whether they were seized in the act of trespassing or not, and whether they are the property of the person convicted of the offence, or were only in his charge when the trespass was committed.

COFFEE.

Worms on coffee roots. Attention is invited to the letter under this heading by "Young Planter." It is a pity that such practical queries are usually left unanswered by our readers, showing a degree of apathy which is lamentable. We trust some experienced planter, with similar experience may be found who will find time to advise our anxious querist.

In the meantime, we should counsel "Young Planter" to forward specimens of the worms and roots (the former in alcohol) to the Director of the Indian Museum, Calcutta, for identification and advice.

Belts to arrest spread of blights. We doubt if sufficient attention is paid nowadays to the great importance of preserving or planting belts of trees on plantations. Not so much to preserve the coffee from wind as to form more or less impermeable screens to the passage of blights, such as leaf disease, and black and green bug. There is little doubt that, were such belts liberally provided, that the course of the blights will be a great deal slower in travelling from end to end of a district than is at present the case with our large stretches of almost unbroken cultivation.

Certainly both forms of the slower spreading and less mysterious bug could be arrested on a belt-protected plantation with far greater ease than is now possible. On the first appearance of bug, remedies could be concentrated on the particular field affected with considerable chances of success.

INFLUENCE OF BEES ON CROPS.

As bearing intimately on the question we recently alluded to, the following extract from the Hawaiian *Planters' Monthly* will be of great interest:—

[In the August issue of the *Planters' Monthly* (page 387) was printed a portion of a very interesting article on the part which bees take in producing an abundant harvest of fruit. The writer of that article, Mr. Albert Gale, continues the subject in the May number of the *Agricultural Gazette* of New South Wales, giving details of the process of fertilizing of various plants, and the part which bees and other insects take in it. We reproduce such portions of it as will interest our readers, and would here state the result of our own convictions that the productiveness of fruit trees, including coffee, will be greatly insured by the introduction of a few hives of bees among the trees or near by. Perhaps the absence of bees or other fertilizing insects may be one of the principal

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contain per ton:—

61.50	lbs. Nitrogen.
57.88	" Potash.
14.92	" Lime.
13.68	" Phosphoric Acid.

Seed cured under Messrs. Sutton and Sons' advice.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs.6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only *thornless variety extant*, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE,

Shencottah.

causes of failure in the expected crops, after the trees have blossomed heavily.—EDITOR, *Planters' Monthly*.]

It will be noted hereafter, the most essential parts of a flower are the stamens and pistil. These essential organs are most vigorous, healthy, and free from blemish in the earlier parts of the day. Just after the corolla bursts these unfurl, the anthers become distributive, i.e., the pollen they contain is sufficiently mature to be wafted by the wind or gathered by insects or other agencies for fertilizing purposes—and later, the stigma becomes receptive. The atmosphere during these early hours, in spring time, as a rule, is characterized by a dead calmness, or at the most by gentle breezes. This calmness is most beneficial and is a highly necessary agent in ensuring successfully the fructification of entomophilous fruits. The more frequently the bees trip to and fro from home to orchard and orchard to home, the greater and better are the results that follow their labours.

I have used the terms bloom, flower, and blossom indiscriminately. They are synonymous. The two former are generally applied to the flowers on ornamental plants and the last to fruit trees.

To understand how the all-important work of fertilization is carried on by bees and other insects, it will be necessary to glance over the accompanying diagrams and have a slight knowledge of the functions each portion of a bloom has to perform.

The pistil is divided into ovary style and stigma. The stigma is the end of the style turned inside out. It has four very peculiar characteristics: First, it is skinless; secondly, it is adhesive—if it be applied to down or a light feather it will adhere to it; thirdly, it is porous; and in the fourth place, it is covered with a lot of hair-like hooklets. The peculiarities in the stigma form important parts in the economy of fertilization taken in conjunction with the offices performed by bees in relation to fruit and the reproduction of plant life. The style is traversed internally by a canal forming a tube which is the connecting link between the stigma with the ovary.

The stamens are the masculine reproductive organs, and, like the pistil, different portions of it receive different terms—the anthers and filaments. The filaments are thread-like appendages, and are generally attached to the base of the corolla, and not to the ovary, as in the case of the style; neither is it tubular. Their office is to support the anthers, and to keep them in their proper position. The anthers, generally two in number, are situated at the summit of each filament. They are different forms, according to the class of fruit borne by the tree—round, angular, elongated, or sometimes twisted. When the blossom first opens, the anther is usually of a bright colour—generally yellow. Its upper surface is a flat, smooth disc. As the day advances, and the anther matures, each one opens with a longitudinal slit its entire length. It can then be seen that each anther is a pocket or sac filled with pollen—a very fine dust-like flour. Pollen is of a variety of colours—white, red, pea-green, etc., are of frequent occurrence—but the predominating colour is some shade of orange. By watching at the entrance of a beehive, different bees will be seen to enter with pollen of various shades, although they prefer to work on those blooms that are yielding the greatest quantity. By taking a piece of honeycomb containing bee-bread, and cutting a cell filled with it longitudinally, strata of various colours are always to be seen. In flowers that are fertilized by insects, the pollen is usually of a sticky nature. This property is availed of by the bees. By this they knead it into small pellets, and neatly pack it in the pollen baskets on their hinder legs. The pollen of pumpkins and other members of that family, on account of its non-adhesive quality, they cannot so treat, but carry home in the hairs of their bodies. The pollen of blossoms fertilized by the wind is also non-adhesive. Pollen grains are of various forms, according to the class of plant it is taken from. * * *

The beneficial influence of bees on certain crops, and the imperative necessity for their location within a near radius of fruit-trees, demands more than the usual passing glance. I say a near radius, because the nearer the home of this insect is to the orchard or fruit garden, the more frequently can they visit the blossoming fruit-trees. The earlier in the day the bees visit the blooms, the more certain will be the act of fructification and the resultant fertilization the more effectual. Bees have been seen on their foraging ground beyond a radius of three miles. These long journeys must be undertaken at the expense of the number of trips made during the day.

Blossoms open at various hours, both in the day time and in the hours of night—the majority in the early morning just after sunrise, some at noon, others in the twilight, and a few varieties after dark. Some classes of blooms are very sensitive to light and darkness and

will only open when the sun shines brightly. Those that open in the earlier portion of the day generally close towards sundown and reopen the following sunrise. Those that open at twilight and after it close at dawn. Evening and nocturnal opening flowers are visited by moths and other insects that are on the wing during the time between twilight and dawn. During a heavy flow of honey, bees will work for some time after sunset and well on towards darkness. On warm evenings the writer has more than once seen bees return home by the light of the moon when the latter has been shining brightly. Of course diurnal flowers are visited by diurnal insects.

Anemophilous flowers (those that are fertilized by the wind) do not close after they have once opened. The anthers being attached to the filament so tenderly, the slightest movement caused by a passing breeze is sufficient to shake the pollen to the stigma. It is the soft, gentle breeze that is efficacious in the fertilization of cereal crops—wind just sufficiently strong to carry the pollen a few feet from the anther that produced it. At the time wheat and other cereal crops are in flower, when the pollen is mature and hanging loosely in the anthers, heavy wind storms are as destructive as late frosts. Many a crop that has appeared promising enough when in blade has failed to give a heavy yield, owing to strong winds catching up the pollen and wafting it away in the bush, or elsewhere, where its influence is lost.

TEA.

Those lively Japs!

While the Chinese are still talking of what they want to do to rehabilitate their trade in their old markets, Japan has already entered the lists. The following are the contents of an advertisement in the *Philadelphia Inquirer* with a type border of Japanese work to attract additional attention:—

The undeniable superiority of Japanese tea and the distinguishing popularity which it has attained on this continent are due: First,—To certain peculiarities of soil and climate common to no country other than Japan. Second,—To the exceptional intelligence with which its culture has for centuries been conducted. Third,—To the traditional care and cleanliness with which it is prepared for market. That its refreshing excellence is appreciated in the United States is shown by the interesting fact that of the 93,000,000 pounds of tea imported into this country last year, 61,000,000 pounds came from Japan. Official Japanese Recipe—use one teaspoonful of leaves for each cup. Pour on freshly boiled water. Steep two or three minutes. Never boil the leaves. Neither sugar nor milk recommended.

Java's future.

Despite the low average obtained by most Javanese teas in London, the acreage under the shrub is steadily increasing, and the improved jats and methods now adopted will go far to making this country a formidable competitor in the not distant future.

Mr. J. H. S. Davidson, who went to Java some three months ago, in the interests of the firm of Messrs. Davidson & Co., has returned to Colombo, we learn from the *Ceylon Times*, with a very good impression of tea-growing prospects there. He says that, though tea has been grown for a long time past in Java, the success of the place as a tea-growing country undoubtedly lies in the future. It is only recently that tea growing and tea making on lines such as are in vogue in India and Ceylon has been introduced, and the result is that enormous tracts of land are being opened up, and there is a great demand for the newest kind of machinery. Mr. Davidson has had good opportunities of seeing tea cultivation in India, Ceylon, and Natal, and he says he never saw a place better fitted for the industry than Java. From what he could see, the soil is excellent, and there is very little trouble in regard to labour. It is all Malay labour, of course, and it is free;—that is to say there is no such a thing as coast advances, as in Ceylon, or

agreements to work for a certain period, as in India. He says the Malays are slower workers than the Tamil, but far more plodding and reliable. Mr. Davidson saw two estates of over a thousand acres each, being opened up by Dutch colonists, and he says that not only is the soil very good but it takes less trouble to clear it than in Ceylon. These estates were at an elevation between 3,500 ft. and 5,000 ft. and gave promise of bearing very good tea. There are also many other recently opened estates not yet in bearing which promise well. Mr. Davidson was also much struck with the facilities for travelling in Java. The gradients are not so steep as in Ceylon, and he says that, besides a railway which runs into the heart of the tea-growing district, they have remarkably good roads. A kind of tea they grow in for there to some extent is known as "white tips." It is a very delicate, light liquoring tea, made without fermentation, and is shipped to Bombay *en route* for a market in Arabia, where it seems to be much appreciated. Mr. Davidson was also struck with the coffee grown in Java, and says the island seems to have a future in mineral products as well as vegetable, for while he was there some large new petroleum springs were discovered, and syndicates were formed to manage them. He says all the Dutch planters seem well educated, go-ahead men, and speak English very well, while, unlike Ceylon planters, they appear to regard Java as their home and to have settled in the country for good and all. He only met two English planters in Java, but both were doing well. One is Mr. Bingley, who was in Ceylon for a time, and the other Mr. Evans. Mr. Bingley has with him Mr. Adams, who went out from Ceylon at the recommendation of Mr. Wright not very long ago. According to Mr. Davidson, when all the newly opened estates in Java come into bearing, it will make an appreciable difference on the tea market.

Darjeeling on Ceylon.

The well-known Darjeeling planter, Mr. Christison, is engaged in a lengthy tour throughout the tea districts of Ceylon and India. He has first visited the Island, and speaks very highly, though cautiously, of what he has seen there. He proceeds to Travancore, thence to Upper India, and lastly, if possible, to the Wynaad.

These are his impressions on Ceylon as compared with Darjeeling:—

ADVANTAGES.

1. Climate.
2. The slopes are more gentle, lending themselves better to terracing, manuring and surface draining.
3. The estates are less costly in the preparation of the land for planting and in after cultivation.
4. In regard to transit, you have splendid roads with easy gradients. Even in the gardens themselves, you have the advantage over us, for everything is carried on men's backs in Darjeeling.
5. In regard to water-power, you are most advantageously situated, the water being more easily brought to the side of your factories than is the case with us.
6. The soil is even (though I consider nothing I have seen anywhere in Ceylon equals our best Darjeeling soil), and the land less broken up. There are fewer uncultivable portions. The gardens are much more compact.
7. Looking at the physique and health of Europeans of long residence, I am convinced that even with the fine climate of Darjeeling you have an advantage.
8. Through all the hill districts, so far as I have seen, the rivers are gentle in their flow; to some extent they are navigable with slight artificial aid. They are such a contrast to the mountain torrents of Darjeeling.

POSSIBLE DANGERS.

Nature (continued Mr. Christison) has been so lavish and so liberal to you that I am afraid you do not realise the importance of some sources of danger. May I diffidently suggest the following:—

1. I have spoken as to the healthiness of the plant I have seen; but I believe in no instances in any former experience in any crop where there has been such a surface covered has there been exemption from blight. This ought to be thought about. I sincerely hope you will escape, but you will be exceptionally fortunate if you do. Wherever there is a large area of cultivation, no matter what plant, in any country and in any climate, there comes in time blight.

2. The want of rest for the plant is another source of danger. You are always plucking or pruning. Pruning is not a rest, but a surgical operation more trying than plucking. I look upon it as a more severe process for the plant than plucking.

3. I have seen some indications of waste of soil by wash, and this requires to be seriously thought about—the effects of wash year by year, the carrying away of the constituent properties of the soil by rain. Yours is a light friable soil, and in spite of your admirable and complete system of drainage, this requires grave attention.

4. We do not know the life of the tea plant yet. When tea is reduced to a science, the deterioration of the plant will be understood and must be reckoned with. Wherever the plant comes into full bearing, you ought to write off a sum for annual deterioration of the plant in the same way that you write off for deterioration of buildings and other property.

5. In many districts the want of firewood fuel will become very pressing, and, though I give you credit for much planting along roadsides and also separate plantations, further steps in this direction might be carried out with advantage in the shape of separate forest plantations.

FACTS ABOUT TEA SEED.

[CONTRIBUTED TO THE "PLANTER."]

ABOUT the middle of September the seed begins to fall, and previously to this we have cleared all the jungle from the foot of the bushes, so that picking it up may involve as little trouble as may be. As soon then as the first signs of falling seed appear, the children and some of the women are put on to grope for what they can get. At first this is little, but the seed ripening, the night breeze shakes down more and more until there is sufficient to justify the cleaning preparations in view of the first challan; so we spread the seed out in the sun, and down beside it plant such of the garden labour force whose physical incapacity for arduous labour best fits them for the matter in hand. These strip off the outer skins and throw the cleaned seed into baskets. Next day the cleaned seed is put little by little into a tub of water. Such as floats is thrown aside, and that from the bottom and floating in mid water is gathered up and spread on *chalnies* to dry. Some make a second quality of the mid-water seed, and keep it separate. Dried, the seed is buried in layers in beds of clean dry sand heaped up on a leaf-house floor, ready for packing. The seed ripening still further, artificial assistance is necessary to cause it to fall, so some able-bodied men are put on to give the trees a good shaking. This brings down a lot, and soon we are in the thick of our season cleaning, sorting and packing as fast as we can.

The packing requires a little care in its supervision. We here use tea chests cut in half, as we find, filled with half a maund of seed packed in charcoal, lidded, nailed down and bound with iron; the finished chest turns out just a maund. This is as much as the despatch service allows.

The mi-tri first cuts the boxes in half. The bottom half is then taken, and the bottom and all four sides lined with stout paper. Then a layer of charcoal is dropped in thick enough to bed a seed in. Ideas vary as to the best transporting medium. Some use charcoal, others charcoal mixed with sand or earth, others again light dry earth only. On the first layer of any of these seed is scattered as close together as may be, but not lying double. This is

covered with the packing mixture and another sheet of paper laid down. Then the operation is repeated until the chest is full up, and a final sheet of paper is put down under the lid.

The seed and charcoal or otherwise are weighed out for each box, and one or two seed taken out from each as a test to determine the percentage. Now in this testing much difference of opinion is shown, and until a uniform method is agreed on, it is as well in agreeing to a minimum per cent. good to know how this will be arrived at. This is the usual method. Take one hundred seed, and breaking the shells, split them open into the two natural halves. Then all absolutely bad is counted out in one row, so many as are 'spotted' in the second, and the good seed is in the third. The bad is at once counted out. In the spotted, two out of three are counted good, and these plus the third good row give the percentage. This is a very fair method, and is usually accepted. The difference of opinion lies in the spotted seed. Some men testing will count out the absolutely bad as before, and into this count all seed spotted near the germ. Those spotted away from the germ, on the other hand, being reckoned all good, there is not very much room on the surface of an opened seed, and the meaning of the word "near" may be read differently, as one is seller or buyer. It is a delicate matter. Others again—these being buyers—will split a seed into four, lest any imperfections should remain hidden after a single cut.

The boxes are hooped, marked and sent off by the quickest route. The price runs from sixty to two hundred rupees a maund, and a further charge of rupees three per chest is made for packing. The expenses of collecting it on the garden are small, so the profit is fair. First, however, catch your seed.

ACME TEA CHESTS.

THESE chests are now being largely used in India, and the two firms who act for the "Acme" Tea Chest Company have begun to keep stocks in Calcutta. For the benefit of our readers we give here a short sketch of this patent carrier. It goes without saying that, being made of thin plates of steel, and therefore taking up much less room on boardship than wooden chests, the "Acmes" effect a considerable saving in freight, and in consequence of their lightness they carry a greater quantity of tea under the same gross weight and so save in warehouse charges.

These chests are sent out to the garden in the flat form, the different parts of about a dozen chests being packed together in a wooden skeleton case, on the outside of which is very legibly marked the capacities and tare weights of the chests it contains. The manager of the garden can always have a stock at hand in small bulk of the several sizes suitable for his tea. The storage space taken up in the factory is less than one-half the space occupied in storing the same quantity of wooden shooks.

The minimum of trouble is secured in putting the "Acme" together in taring, weighing, filling and fastening up. We learn from a manager of long experience in India, who now uses no other chest, that the putting together and completing 60 per day is the ordinary work of one factory mistry, or three times as many as the same mistry could do of wooden chests.

The "Acme" chest, when completed, with its load of tea, has a very taking appearance, and assuming that our informants, who doubtless have large experience with them, are correct in saying that they deliver the tea in excellent order in London and are popular with tea-buyers there, we do not see that in simplicity, handiness, and general efficiency these chests leave much to be desired, and we would recommend for them a fair trial.

No tea lead, hooping iron, or solder are required, so that pilfering of these stores on the garden—a not inconsiderable item—obviously

Advertisers are notified to send all advertisement matter and answers to advertisements direct to Manager, this paper, 3, Esplanade Row, Madras.

Correspondence and matter for publication to be sent to Editor, this paper, Coonoor.

disappears. Of late complaints of "cheesiness" in teas arriving in the market have become increasingly common. The taint attributed to the use of unseasoned wood in the making of chests is a serious matter for all concerned. Local contractors so frequently fail to deliver to time, that planters have practically no alternative but to use planking which is not properly seasoned, and in consequence the teas when put up to sale do not meet with the competition awaiting invoices which are free of taint. In view of these considerations, and the economies in freight and charges claimed by the makers for their package, it seems more than likely that the "Acme" tea chest, now that it is available on the spot, will speedily make an enduring place for itself. As to the strain it is able to bear, we cannot do better than quote from the Indian Tea Association's Report by the Special Committee appointed to investigate the handling of tea chests by the Port Commissioners:—"From what we saw at the warehouse and jetties, we have arrived at the opinion that it is almost impossible to expect chests containing over 100 lbs., except perhaps the 'Acme' chests, to be safely and properly handled."

ROUND THE BUNGALOW.

NOTES BY A PLANTER'S WIFE.

More liberal use of butter. No dietetic reform would, I believe, be more conducive to improved health among children, and especially to the prevention of tuberculosis, than an increased consumption of butter. Our children are trained to take butter with great restraint, and are told that it is greedy and extravagant to eat much of it. It is regarded as a luxury, and as giving a relish to bread rather than in itself a most important article of food. Even in private families of the wealthier classes these rules prevail at table, and at schools and at public boarding establishments they receive strong reinforcements from economical motives. Minute allowances of butter are served out to those who would gladly consume five times the quantity. Where the house income makes this a matter of necessity, there is little more to be said than that it is often a costly economy. Enfeebled health may easily entail a far heavier expense than a more liberal breakfast would have done.

Cod-liver oil costs more than butter, and it is besides often not resorted to until too late. Instead of restricting a child's consumption of butter, I would encourage it. Let the limit be the power of digestion and the tendency to biliousness. Most children may be allowed to follow their own inclinations, and will not take more than is good for them. The butter should be of the best and taken cold. Bread, dry toast, biscuits, potatoes, and rice are good vehicles. Children well supplied with butter feel the cold less than others, and resist the influenza better. They do not "catch cold" so easily. In speaking of children, I by no means intend to exclude other ages, especially young adults. Grown-up persons, however, take other animal fats more freely than most children do, and are besides allowed much freer selections as to both quality and quantity. It is not so necessary to raise any clamour for reform on their account.

Some time ago I was asked how to get rid of flies. Since then I have come across the following recipe which reads as though it would be very efficacious and certainly would be very easy to try.

Destroying flies.

Take some jars, mug or tumblers, fill them half-full with soapy water, cover them as jam pots are covered with a piece of paper, either tied down or tucked under the rim. Let this paper be rubbed inside with wet sugar, treacle, honey or jam, or anything sweet; cut a small hole in the centre, large enough for them to enter. The flies settle on the top, attracted by the smell of the bait. They then crawl through the hole to feed upon the sweet beneath; meanwhile, the warmth of the weather causes the soapy water to ferment and produces a gas which overpowers the flies, and they drop down into the vessel. Thousands may be destroyed this way, and the traps last a long time. A large handsome Japanese lily (*lilium auratum*) kept growing in the room will drive them away.

Hints various.

Lamp wicks should have the charred part rubbed off with a rag kept for the purpose. They should very seldom be cut. They should not be used so long that the webbing becomes tight and non-porous.

When it is required to use carbolic acid as a disinfectant, it should be mixed with boiling water. This promptly overcomes the usual antagonism between the acid and the water and converts them into a permanent solution, which will keep for weeks.

Here is a receipt for cleansing delicate laces which an old lace maker, who has woven many a gossamer web for the great connoisseurs and lover of laces, Mdme. Modgeska, gave to her pupil and patron. Spread the lace out on paper, cover with calcined magnesia, place another paper over it, and put it away between the leaves of a book for two or three days. Then all it needs is a little skill to scatter the powder, and its delicate little threads are as fresh and clean as when first woven.

To clean zinc articles, rub them well all over with paraffin oil applied on a piece of flannel; then make a lather of hot water and soap, and wash them well in it. This treatment will render them almost equal to new.

DISTRICT ASSOCIATION.

SHEVAROYS.

PROCEEDINGS of the Monthly Committee Meeting of the Shevaroy Planters' Association held in the Victoria Room, Yercaud, on Monday, 1st November, 1897, at 1 P.M. *Present*:—Mr. H. W. Leeming, Rev. M. Anderson, Messrs. J. C. Large, Messrs. C. G. Lechler (*Chairman*), Rev. J. M. Kampf, Messrs. C. Rahm, S. M. Right, and R. Gompertz (*Honorary Secretary*).

Read and Recorded letter from Secretary, U. P. A. S. I., dated 9th October 1897, forwarding copy of a letter from the Accountant General, No. 3044, of 2nd instant, re charging commission for changing currency notes.

Read letter No. 1062, dated 16th instant, from the Deputy Inspector-General of Police, forwarding abstract of Coffee Stealing Act, copy of his instructions to his subordinates, and of a letter to the Collector recommending that all warrants for arrests of coolies, &c. should be registered by the Station House Officer, Yercaud.—*Recorded with satisfaction.*

Read letter from Secretary, U. P. A. S. I., dated 22nd October 1897, forwarding copy of a letter from Sir W. Mackworth Young thanking U. P. A. S. I. for their appreciation of his services.—*Recorded.*

Read letter from Mr. Leeming giving notice that he will propose that surplus funds be devoted towards purchasing books, &c.

Resolved that Mr. Leeming's proposal that surplus funds be devoted to purchasing books and pamphlets, &c., with a view to forming the nucleus of a Planting Library be adopted, and that the Honorary Secretary be requested to invite all members to send him the names of any works they may wish for.

Read and Recorded letter from Mr. Leeming, dated 18th October 1897, withdrawing his complaint referred in para. 3, clause 2, of Proceedings of last General Meeting.

The following papers were laid on the table:—Proceedings of Coor and Nelliampathy Associations. *Planting Opinion* for 9th, 16th, 23rd and 30th October. 2 Copies of Agricultural Ledger No. 17 of 1896 (Water lifts). No. 9 of 1897, Lagerstræmia Flos Regni (Jarul).

C. G. LECHLER, *Chairman*.

ROBERT GOMPERTZ, *Hon. Secretary*.

IN CASE OF FIRE.

Your house takes fire. What burns first? The lightest and most inflammable stuff, of course—furniture, doors, shelves, floors, paneling, and other woodwork. If it is a stone or brick house, the wall will probably remain standing—a melancholy sight.

Were not this a principle of universal application, Mr. Medding would never have compared himself to a skeleton, as he does in the letter to which your attention is now invited.

"In the autumn of 1891," he says, "I fell into a low, weak state of health. My ordinary energy appeared to have gone out of me, I always felt tired and languid, and couldn't account for it. Nothing seemed to rest me. I was as tired in the morning as when I went to bed. I had a bad taste in the mouth, my appetite was poor, and after meals I had a pain at my chest and left side.

"I was in this condition until the 14th of March, 1892, and then I had to give up work. The reason was, I was too weak to work."

I act, I was so weak that it was about as much as I could do to walk across the floor. Besides this I had a dry, hacking cough; and at night I sweat so the bedclothes were wet. Sometimes during the day cold, clammy sweats would break out all over me.

"I lost flesh rapidly, until I was like a skeleton. My muscles seemed to be shrunken and withered. There was no feeling of warmth in me; it was as though my blood had gone cool and thin. I was too feeble and helpless to wash or dress myself, and people said I was wasting away, as though they expected to see the end of it presently.

"I consulted two doctors and they gave me medicine, but it did me no good. One day my aunt, Mrs. Benton, of Francis Street, Walsall, called, and in the course of talk she said that the medicine that did her good when she was ill was Mother Seigel's Curative Syrup. Although it didn't look reasonable to believe that it could cure a case as bad as mine, nevertheless my wife got me a bottle from Mr. Grove, the chemist in Park Street, and I commenced taking it. In a few days I found myself much better; my appetite was better, and I had gained a little strength.

"To make the story short, I kept on taking the Syrup and continued to get better. As soon as I could digest my food, the night sweats and the cough abated, and in a few weeks I was able to go back to my work. That is two years ago, and since then I have been in good health, for which I have to thank Mother Seigel's Syrup. (Signed) Arthur Thomas Meddings, 115, Farringdon Street, Walsall, March 6th, 1894."

In a fire, as we said, it is the light, inflammable stuff that burns first. That's why Mr. Meddings got to be so ghastly thin. The flesh or fat is the fuel of the body. In health it keeps up the warmth and furnishes the power. And to keep up the fuel we must eat.

Now, disease is a conflagration; it tries to burn the house up, and often does it. And it always burns the flesh up, more or less of it. The fat goes first, the muscles, &c., afterwards. That's the way of it. About that time the tenant moves out.

Our friend was well on towards that point. But it wasn't lung disease that ailed him, albeit he had the cough and the sweats. They go also with indigestion and dyspepsia—his real and only malady. He got feeble and thin because his disease wouldn't allow the stomach to digest food. Hence he consumed all the flesh he had stored up, and then (luckily for him) he began to take Mother Seigel's Curative Syrup, which set his stomach and liver right, and gave his victuals a chance to feed him.

All the same, it is dangerous to let a fire get headway. When it is in your body, quench the first spark with Mother Seigel's Curative Syrup.

IMPORTANT TO PLANTERS.

PRESERVE YOUR HEALTH AND THAT OF YOUR COOLIES

BY USING

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THE ONLY KNOWN ANTIDOTE AGAINST MALARIAL POISON.

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TO MATCH, (WITH KNITTED OR HEMMED FRINGES
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PER-PHOSPHODINE,

A SAFE, PROMPT AND RELIABLE
PHOSPHORIC REMEDY

FOR

NEURALGIA, Nervousness, Lassitude, Overworked
Brain, Nervous and General Debility, Failure of
Memory, Dimness of Sight, Depression of Spirits, Impover-
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This is a stable and reliable solution of Free Phosphorus
(Unoxidised Phosphorus) combined with Iron, Quinine and
Strychnine. It is thus a valuable and highly efficient
combination of nerve tonics, and will be found admirably
adapted to the treatment of all ailments which have their
origin in nervous exhaustion.

It will also be found very useful in convalescence from
fever and other debilitating diseases.

CERTIFICATE. "I honestly believe the Per-Phosphodine,
sold by E. PLOMER & Co., to be about the best patent
medicine offered to the Indian Public."

Rs. 4 per Bottle, packing charge annas 4, extra.

E. PLOMER & CO.,

CHEMISTS, &c.,

LAHORE, PUNJAB.

MARKET SUPPLEMENT.

SATURDAY, NOVEMBER 20, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (October 29, 1897) says:—Small supplies are still noticeable in Public Sale, but the demand is slow for all descriptions except the superior qualities.

Only second hand parcels of East India were offered, which sold slowly at unchanged values.

Columbian formed by far the greater part of the Central American catalogued, good colory grades realised full rates, but mixed and common kinds declined 1/- to 2/-.

The 'Terme' market has been weak and prices have given way 2/6 since our last in consequence of an estimate of 9 million bags for the present Brazil crops, and cheap cost and freight offers.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending October 27th, 1897, says:—Bank rate 3%. Bombay Exchange closes at 1s 3 $\frac{1}{2}$ d. Brazil Exchange 7 $\frac{1}{2}$ d. Rupee paper 3 $\frac{1}{2}$ % 62 $\frac{1}{2}$. Silver 27 $\frac{1}{4}$ d per oz.

This market continues dull and lower for ordinary and common, which are difficult of sale, whilst there is good competition for the finer qualities at fully previous prices; business is generally very slow. Brazil markets are again lower, on larger estimates, and there seems no doubt now that the present crops will be, if not larger, at any rate quite as big as last year. Good average Santos is worth about 30s, c. & f.

Futures opened rather firmer, but have since been depressed, and close 1s 6d lower, viz. — Good average Santos in Havre, December delivery, fcs. 39.75, in Hamburg pf. 34 $\frac{1}{2}$, and No. 7 low ordinary Rio in New York \$6.10. To-day's London official quotations are:—

	Oct.	Dec.	March	May	July	Sept.
SANTOS ...	31/6	31/9	32/3	32/6	32/9	33/-

We quote:—

Ceylon, mid. to good mid.	102/ @ 106/	Costa Rica, mid. to fine ..	84/ @ 110/
Do. small to low mid.	79/ „ 101/	Do. ord. to low middling.	60/ „ 83/
East India, mid. to good		Jamaica, good to fine ord.	53/ „ 70/
mid ..	90/ „ 103/	Do. greenish to fine	
Do. small to low mid.	72/ „ 89/	colory...	75/ „ 125/
Guatemala, mid. to fine...	82/ „ 106/	African	30/ „ 33/
Do. good ord. to low		Columbian, ordinary	46/ „ 52/
mid...	62/ „ 81/	Do. good ord. to	
Salvador, good ord. foxy		low mid...	53/ „ 82/
greenish...	56/ „ 57/	Do. mid. to fine...	82/ „ 108/

Receipts in Brazil to 26th Oct. compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
Rio ...	1,851,000	1,429,000	1,045,000
SANTOS ...	3,273,000	2,413,000	1,615,000
	5,124,000	3,842,000	2,660,000

Auctions:—

17 casks and tierces Plantation Ceylon	... @ 73/	@ 109/
100 bags East India Neilgherry, part sold	... „ 67/	„ 90/
3,090 bags Columbian, chiefly sold	... „ 48/	„ 108/
1,196 bags Costa Rica, part sold	... „ 43/8	„ 72/
696 bags Guatemala, part sold	... „ 48/	„ 100/6
246 bags Vera Paz small part sold	... „ 87/6	„ 98/6
221 Nyassaland	... „ 56/6	„ 106/
251 bags Liberian, Johore, bought in.		
9 bags Liberian, Penang, bought in.		
8 bags Liberian, African, bought in.		
135 bags Java bought in.		
94 bags Mexican, part sold	... „ 44/	„ 56/
32 bags Honduras, bought in.		
379 bags Nicaragua, part sold	... „ 53/	„ 62/
500 bags Washed Santos, part sold	... „ 59/	„ 72/

On Quay Terms:—

789 bags Santos, small part sold	... @ 34/	@
Landed last week ... 499 tons.	Deliveries ... 703 tons.	Stock ... 10,501 tons
Do. last year ... 700 „	„ ... 727 „	„ ... 8,308 „

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report dated October 29th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON

FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	574,436 packages.	540,402 packages.	18,383 packages.
1896-1897...	578,869 „	485,507 „	20,196 „

46,576 pkgs. INDIAN } Total 67,364 packages were offered in public
19,994 „ CEYLON } auction this week.
794 „ JAVA }

With the expectation of lighter supplies than was anticipated a few months ago, business continues brisk, and offerings of both Indian and Ceylon Teas are readily taken at steady prices.

Indian. 46,576 packages were brought forward against 45,522 last week. The market for all grades, except perhaps medium whole leaf Teas with poor liquors, being steadily supported. Competition throughout the sale was fairly general.

It will be seen from the following table that the average price obtained for all Indian Teas sold on garden account since 1st June is a half penny less than last season, the details of the various districts being given below.

The following averages are worthy of note:—“Beheading,” 1/ “Oaklands,” 1/2; “Solimbong,” “Assam Co Dhole Bagan,” “Mohokut” and “Towkok,” 1/1 $\frac{1}{2}$ d.

Week's av. of Tea sold on Garden Account, 1897, 35,898 pkgs.

av. 9'05d. 1896, 37,922 pkgs., av. 8 $\frac{1}{2}$ d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	19,939 p 10 $\frac{1}{2}$	19,510 p 9 $\frac{1}{2}$	187,670 p 10 $\frac{1}{2}$	190,426 p 10
Cachar and Sylhet..	8,939 p 7 $\frac{1}{2}$	7,422 p 8	102,783 p 7	90,413 p 7
Chittagong	801 p 7 $\frac{1}{2}$	—	2,663 p 7	958 p 7
Chota Nagpore	—	127 p 5 $\frac{1}{2}$	667 p 4 $\frac{1}{2}$	724 p 4
Darjeeling	1,165 p 11 $\frac{1}{2}$	2,314 p 1/0 $\frac{1}{2}$	34,178 p 11 $\frac{1}{2}$	32,827 p 1/
Dooars	3,197 p 7 $\frac{1}{2}$	5,447 p 7	51,914 p 7 $\frac{1}{2}$	50,913 p 7
Kangra, &c.	612 p 7 $\frac{1}{2}$	82 p 6 $\frac{1}{2}$	1,142 p 7 $\frac{1}{2}$	2,618 p 7
Neilgherry	70 p 9 $\frac{1}{2}$	186 p 6 $\frac{1}{2}$	2,878 p 7	1,278 p 7
Terai	775 p 7 $\frac{1}{2}$	441 p 6 $\frac{1}{2}$	11,710 p 7 $\frac{1}{2}$	4,923 p 7
Travancore	400 p 7	2,393 p 7 $\frac{1}{2}$	14,764 p 6 $\frac{1}{2}$	12,358 p 7

Total sold on Garden Account 1st June to date 1897, 413,369 pkgs. av. 9'09d. 1896, 387,438 pkgs., av. 9'51d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	3 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d
FANNINGS. (Red to brown, strong rough liquor)	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d
BROKEN TEA. (Brownish to blackish, strong liquor)	6 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d
PEK. SOUG. (Blackish greyish, useful liquor).	6 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d	7d	7 $\frac{1}{2}$ d
PEKOE. (Greyish to blackish, some tip, useful liquor)	7 $\frac{1}{2}$ d	8d	8d	9d
PEK. SOUG. (Blackish greyish, inferior liquor).	5d	5 $\frac{1}{2}$ d	5 $\frac{1}{2}$ d	5 $\frac{1}{2}$ d
PEKOE. (Blackish greyish, some tip, inferior liquor)	5 $\frac{1}{2}$ d	6d	6d	6 $\frac{1}{2}$ d

SUPPLEMENT TO "PLANTING OPINION."

Ceylon. The auction was again light, consisting of 19,994 packages against 20,108 last week. The recent advance was fully maintained, bidding being steady and competition strong for all descriptions. Only a small sale is advertised for next week, consisting of 18,589 packages.

The following averages may be mentioned:—"Newera Eliya T Co. Concordia," 1/3; "S T Co. St. Leonards," 1/2; "Ormidale," 1/1½; "Haputale T Co. Kellie," 1/1½; "Portmore T Co Port," "Henfold," "St. Clair," and "Scottish Trust and Loan Co Alnwick," 1/1.

Average for the week 9'03d., against 8½d. for the same period last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 923,952 pkgs., av. 7½d. 1896, 830,146 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6½d	6½d	7½d	7½d
PEKOE (Ordinary leaf, little twist; fair liquor)	8d	8d	8½d	8½d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5½d	5d	6d	6d
PEKOE (Somewhat bold leaf; indifferent liquor)	6½d	5½d	6½d	6½d

Java. 794 packages were brought forward against 710 last week. Bidding was animated, the Teas selling at full valuations, quotations showing a further slight advance on recent rates. Only 108 packages are at present catalogued.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 9'05d.) October 29th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	...	...	...	...	20	8½	36½c	11½	14	7½	...	...	...	...
Kodanaad	70 p	9½	...	...	54	6½	30½c	11½	45	5½	...	...	...	...
Taipoo	129 p	6½	...	...	...	...	...	...	...	...	...	...	...	...
Travancore	400 p	7	...	...	52	6½	33	8	18	5½	...	...	23 p	3 5½
Bonaccord	126 p	6½	...	...	41	6½	63½c	7½	...	...	19	5½	13½ c	3 5½
Braemore	136 p	8½	32½ c	9	20	6½	24½c	10½	...	...	...	...	...	...
Perrindotty	76 p	8½	...	...	27	6½	15	7½	16	5½5½	...	...	4½ c	3½ 6
Poonmudi	62 p	6½	...	...	...	...	...	...	...	...	...	...	...	...

OTHER PRODUCTS.

CARDAMOMS.—At auction 160 packages were offered of which about 130 sold, at 3d. to 4d. lower for medium grades: Ceylon-Mysore, fair long, and round medium pale, realised 3s. 9d.; medium to bold fair yellowish sold at 4s., subject to approval; fair medium, 3s. 6d. to 3s. 7d.; specky and split, 3s. 4d.; dull, lean, and shelly, 3s. 4d. For Ceylon-Malabar, medium to bold brownish pale 3s. 6d. is asked, a bid of 3s. 4d. being refused. Common yellow Seed realised 3s. 3d. per lb. Mail-reports from Bombay, dated September 29, state that a fairly good business continues to be done in cardamoms. Transactions have taken place in Mysore at prices ranging from 2.25r. to 2.50r. per lb., while in Malabar several parcels changed hands from 1.65r. to 1.90r. per lb. The market is very steady, and there is a good demand, especially for Malabar. "Seeds" are quoted at 2r. to 2.10r. per lb. The exports from Ceylon in the periods between January 1 and September 21 of the last four years have been as follows:—

Year	1897	1896	1895	1894
lbs.	366,033	243,177	260,255	212,462

Of this year's shipments, 195,788 lbs. have gone to the U. Kingdom, 29,330 lbs. to Germany, and 140,503 lbs. to India.

CINCHONA.—Seven bales fair West African *Succirubra* quill were shown at auction and bought in at 6d. per lb. This variety now realises prices far above its quinine-value on account of the demand for it on the part of Cinchonidin makers. Of 44 bales *Guayaquil* bark 25 sold at 5½d. to 5½d. per lb. for fair partly brown thin quill, and at 5½d. to 7d. per lb. for fair to good Loxa kind, but damaged. Twenty bales *Carthagera* bark, slightly damaged, but of good quality, were bought in at 7d. per lb.

COCA-LEAVES.—Of 60 bales offered at auction, 41 sold at 4½d. to 4½d. for fair green, rather broken *Truxillo*, slightly damaged, and 2d. to 4d. for more damaged ditto. Fair broken leaf is held for 9d. per lb.

CROTON SEED.—The only parcel offered to-day was one of five bags dark mixed and dull seed from Colombo, which was bought in at 45s. per cwt.

IPECACUANHA.—The supply of Rio root consisted of 52 bales, including some very ordinary damaged and woody "pickings." Altogether 29 bales sold at from 6s. 3d. per lb. according to quality. For good thin sound root 6s. 3d. to 6s. 4d. per lb. is asked. Four packages only of *Carthagera* were offered and sold at from 4s. 6d. to 4s. 8d. per lb.

JALAP.—Somewhat more freely offered and dull of sale. The two parcels at auction aggregated 65 bales, but only a few lots sold. A parcel of 11 bales, slightly wormy Vera Cruz sold cheaply at 5½d. per lb.; another of 15 bales fair, partly small unworked ditto, was bought in at 6½d. per lb. The remainder consisted of fair unworked root, which was bought in at 7½d. per lb.

KINO.—At auction 3 cases (total 205 lbs.) of red *Zambesi* gum, which have been repeatedly offered, were again bought in at from 6s. to 8s. per lb. Of 5 small tins (7 to 14 lbs. each) of good genuine *Cochin* grains, 2 sold at 15s. per lb., showing how firm the market really is.

KOLA.—Barely steady. Four bags good bright bold West Indian realized 6d. per lb. at auction to-day. Seven bags small dry fair African kolas were bought in at 4d. to 5d. per lb. Another parcel of 20 bags was bought in, fair bright washed, at 4d. to 6d. per lb.

QUININE.—On Monday of this week Messrs. *Howards & Sons* established a new scale of prices for their quinine salts. Their rates for 1,000-oz. lots of sulphate are now as follows:—

In	...	100-oz. tins	25 oz. tins	4-oz. bottles
Per oz.	...	1s. 3d.	1s. 3½d.	1s. 4d.
In	...	1-oz. vials	½-oz. vials	¼-oz. vials
Per oz.	...	1s. 5d.	1s. 6d.	1s. 7½d.

Smaller wholesale quantities, 1d. per oz. extra (in 1-oz. vials):—pure quinine, 2s. 1½d.; arseniate, benzoate, and citrate, 2s.; salicylate, hydrobromate, and hydrochlorate, 1s. 11½d.; hydrophosphate, 3s. 4d.; valerianate, 2s. 2d.; phosphate, 2s. 0½d.; and tannate, 1s. 3d. per oz. At auction 5,000 oz. of *Brunswick* quinine in bulk were offered and bought in at 1s. 3d. per oz. The *Auerbach* agents are offering to-day at 1s. 2d. per oz., which is rather lower. A parcel of 2,000 oz. of *Auerbach* quinine in 100-oz. tins was bought in at 1s. 2d. per oz. to-day.

Wax (Bees') was in large supply at to-day's auctions, but met with little demand. 692 packages *Madagascar* were offered, of which about 76 sold at from 5l. 7s. 6d. to 5l. 17s. 6d. for dark warmy to good brown quality. Forty-one packages *Jamaica* were bought in at 7l. 10s per cwt., no bids being made. *Spanish*, of fair quality, is held for 6l. 10s.; *Australian*, of fair colours, 6l. 15s.; *Italian* at 7l. 10s. for good yellow to fair. One package *Mozambique*, of fair quality, sold at 6l. per cwt., and Zanzibar of good colour at 5l. 17s. 16d. Bleached *Calcutta* wax was in fair supply but nothing sold at auction. For a lot of low brown dark quality 10s. was bid—then 11s.; but the lot was taken out. Dull grey *Calcutta* is held for 6l. 10s. per cwt.

Christmas Cards.

A large and varied selection of Raphael Tuck's artistic Christmas Cards may be seen at ADDISON & Co.'s Stationery and Fancy Goods Stores, Mount Road, Madras. These Cards are of the very latest designs, and are very moderately priced.

Any description of PRIVATE CHRISTMAS CARDS made to order. ADDISON & Co.'s facilities for manufacturing Fancy Cards of special shapes and designs are unequalled in Madras.

DIE SINKING & DIE STAMPING.

Crests and mottoes, Address dies, business dies, carefully and correctly engraved and stamping neatly executed in any colour. Copper-plates for visiting cards engraved at short notice.

At Home Cards, Dinner Invitation Cards, Menu Cards, Ball Programmes, Pencils and Tassels, and any description of Society Printing.

STATIONERY AND FANCY GOODS in immense variety.

A large stock of articles suitable for Christmas Presents.

ADDISON & CO.,

***Stationers and Fancy Goods Merchants, General
Printers, Engravers, and Die Stampers,***

MOUNT ROAD, MADRAS.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, NOVEMBER 27, 1897.

[No. 35.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c. Letters to the Editor should be addressed to Coonor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 3rd December 1897.

South Travancore. SHENCOTTAH, 15th November.—I don't think we shall get much more rain this year. A couple of showers between this and Christmas would be all we want, as our N. E. rains have been early and continuous. Some of our coffee has quite enough leaves on already, which is very unusual for the time of the year.

Nellampatty (British). 24th Nov.—*Weather.*—Very bright and pleasant, with cold, sharp mornings. No rain since last report, and water running very short in all the streams already. It clouded up this morning and we may get a shower this evening. *Crops.*—Coffee coming in slowly. What has been picked was the first blossom fruit, and the larger half is just beginning to come in. *Labour.*—Plentiful. *Health.*—Good. *Interesting Items.*—Our local Selous bagged three bears, I hear, the other day.

Nilgiris. COONOR, 24th November.—Still bright and sunshiny, with cold clear nights. The N. E. Monsoon has apparently left us for good and all. The springs are very dry for the season of the year. For a parallel to this exceptional weather we have to go back to 1878, when December (and the latter end of November) made up partly for failure of the early monsoon. We shall certainly suffer next year for this dislocation of the season. As it is, things are getting serious in parts, as coffee is not ripening up at all well. It is on the other hand looking extremely fit, with lots of good bearing wood for next year, and with dark green beautifully glossy foliage. Tea is flushing away as strongly as ever, and is turning out very well in manufacture. Food grains are high, but soon we hope to see a great reduction in the high prices of the last year or so. No one has yet bagged an ibex in these parts, I believe, though several attempts to do so have been made.

Kadur.

MUDIGERE, 24th November.—*Weather.*—Continues fine. Mornings are cold, the thermometer being 58. *Crops.*—Rain is wanted to help to ripen the crop, which is still very slow in coming in. Estimates are being reduced in many cases, and very few original estimates will be realized. *Plant-diseases.*—Leaf-disease still about but not bad. *General Health.*—Good. It is remoured that the plague has made its appearance in Chikmagalur. Another Hospital Assistant is greatly needed; the one at Mudigere is often away for a week, having to visit Kalasa and other places 30 miles away. *Labour.*—Plentiful, and if it continues so, it would be a good opportunity for all planters to keep down advances next year or not advance at all. *Interesting Items.*—*E. lithosperma* plants are to be seen all over the district and seem to do very well. The great desire about here is that the P. O. should be a fortnightly paper. Your "special" correspondent wishes it were monthly.

SOME DANGERS ATTENDANT ON CATTLE MANURING.

WE have been taken to task by a correspondent for not earlier satisfying the curiosity of our readers, aroused by a mention of the remarkable article of Professor Henry Somerville on "Recent Experiments in Denitrification." We will now do our best to redeem our promise. The article, which appeared in the last number to hand of the Journal of the Royal Agricultural Society of England, is unluckily too long to extract in full. Our task will be therefore to present our readers with as clear a *résumé* as possible consistent with the small space at our disposal.

Professor Somerville begins by dwelling on the foremost position still held in the rank of manurial agents by the oldest fertilizer known, *i.e.*, farmyard manure—a position moreover which no artificial manure can be said to have displaced, despite their almost universal application. So important is the old favourite of farmers and planters, that whether we accept them or not, the results of recent investigations held in Germany into their character are so startling that we are forced to give them our serious attention.

Following the headings in the article under notice, we will begin with the

NITROGENOUS COMPOUNDS OF FARMYARD MANURE,

as nitrogen is undoubtedly its most valuable constituent. This element exists partly in the solid fæces, partly in the liquids and partly in the litter. In the solids of the horse, cow and ox, Maercker has shown that most (from 80 to 90 %) is in the albuminoid form, the rest being present as ammonia, nitric acid and amides. The albuminoid nitrogen is extremely slow in its action, and probably but little of it is ever assimilated by plants at all. Of the other three forms of nitrogen, the ammonia and nitric acid are of almost equal value as that in sulphate of ammonia and nitrate of soda, the amide nitrogen being also very active.

The nitrogen in urine is for the most part in the form of urea, which passes with great rapidity into carbonate of ammonia and is practically as available as the sulphate, though no doubt more liable to waste. Wagner found that in ordinary temperature the nitrogen in a mixture of urine and water was practically all converted into ammonia in three or four days.

The nitrogen in straw is chiefly in the albuminoid form and is of but little value.

ACTION OF DUNG IN OTHER NITROGENOUS SUBSTANCES

When various samples of pure horse, cow and ox-dung were employed for supplying nitrogen to plants cultivated in pots filled with soil that contained abundance of universal food, the results were most unexpected. Maercker found that by applying to vats nitrogen in the form of nitrate of soda, the increase over the unmanured yield was 186 per cent. When, however, he gave the same quantity of nitrogen in the form of horse, cow and ox-dung, respectively, the yield was actually decreased. The horse-dung reduced the yield in one case by 20% and in the other by 48%, the cow-dung reduced the yield by 27% only, ox-dung alone increased the yield, and that by 4% only. In two of the above cases, the nitrogen taken up by the plants was less than when unmanured, in the other two cases a slight increase was shown. From vats, Maercker turned to white mustard, but with practically concordant results, though showing still more strongly, if possible, against the use of farmyard manure.

Wagner's experiments were conducted with white mustard, each test, as in Maercker's case, being repeated three times, and the results show great uniformity. With nitrate of soda the increase was about thirty-fold over unmanured output, while cow-dung and horse-dung actually showed a decrease of 69 and 75 per cent., respectively, below the unmanured yield. In these latter cases also, the plants had taken up even less nitrogen than when grown without any but mineral manures. Even assuming albuminoid nitrogen of dung to be absolutely inoperative, yet the ammoniacal and amide nitrogen would certainly if applied above, have produced an increase in the crop. In some way or other, then, the action of this otherwise active nitrogen was hindered. In Maercker's experiments it was found that nitrate of soda and urea were respectively capable of more than doubling the yield when applied to soil without dung, their action was very much less when they were applied in conjunction with either horse, cow or ox-dung. He found that the action of the dung dissipated from 12 to 47 per cent. of the nitrogen in nitrate of soda, the loss being greatest when the largest quantity of cattle manure was used.

Wagner found that mustard recovered 65 per cent. of nitrogen from the nitrate, when this was used alone; only 30 per cent. was recovered when used on a moderately horse-dunged soil. Nor was this action confined to nitrate of soda. When active nitrogen was applied in the form of urea and chopped lucerne, the recovery was, when applied alone, 60 and 38 per cent. respectively; but when in conjunction with dung, the recovery fell to 38 and 8 per cent.

In other and very extensive experiments with white mustard, Wagner tried the effects of applications of nitrate, sulphate of ammonia, blood meal, chopped grass, cow urine, horse and cow-dung, and various samples of farmyard manure. The results were very similar to those already given, and need not be repeated. In each case the harmful effect of the dung was clearly apparent.

What then is the cause of the depressing action of dung in the more active forms of nitrogen? When fresh or comparatively fresh dung is applied to a crop, and especially to a cereal crop, it frequently causes the plants to assume a pale, yellow, unhealthy colour. This condition might be due to two causes: either the dung unfavourably affects the physical condition of the soil, or it exercises a harmful

fluence on the available nitrogen already present in the soil. In the latter case, it would amount to starving the plants of their nitrogen; and that this is the true explanation is clearly indicated by Wagner's experiments with rats. When the plants were about six inches high, it was found that those in the dunged pots were much yellower than those in the unmanured soil, and while in this condition they received a weak solution of nitrate of soda. Doubtless some was neutralised by contact with the dung, but enough was absorbed to markedly change the colour in three days, while in a week the sickly yellow colour had entirely disappeared.

To show that the disappearance of the nitrogen of the nitrate of soda in presence of dung is not due to its sinking into the subsoil, and is only partly due to its appropriation by plant-roots, Wagner carried out the following experiment, in which no plants whatever were grown. A number of pots were all manured with mineral plant-food. Some of them were given $\frac{1}{2}$ gramme of nitrogen in the form of nitrate of soda, others received 600 grammes of horse-dung, while others received both. Six weeks later, the soluble contents were carefully extracted with water. Where no dung was used, 93% of the nitrate of soda was still present, whereas in dunged pots only 42 per cent. of the nitrate was left. More than this, the dung, besides dissipating the nitrogen in the nitrate of soda, had also acted in the natural nitrates of the soil. For the horse-dunged pots gave a filtrate containing only 0.15 gramme of nitric nitrogen, while that from the unmanured and undunged pots gave 0.72 gramme. Yet in another set of experiments, very similar results were obtained by Wagner, showing that the percentage disappearance of nitric nitrogen was greatest where least nitrate of soda had been used, and in the presence of the larger application of dung.

HOW DOES DUNG CAUSE WASTE OF NITROGEN?

Does this nitric nitrogen take the form of some insoluble compound, or of ammonia, or free nitrogen? Wagner, Maercker, Stutzer, Pfeiffer, Dietzell and others have conclusively shown that it is dissipated in the elementary form and escapes of course into the air. This was proved as follows. A given quantity of nitrate of soda and dung was placed in a flask, through which air was drawn by an air-pump. The air that enters the flask is rid of ammonia, and escaping gases are caught and analysed. In every case it was found that the nitrogen was liberated in the elementary form. If the air is altogether excluded, denitrification ceases, but the free natural circulation of air would appear to create as favourable denitrifying conditions as are secured by more rapid and perfect artificial aeration.

Wagner has shown that this loss of nitrogen is due to the action of bacteria. Fresh horse-dung and carbon disulphide were placed together in a flask, being left in contact for six days. At the end of that time part of the mixture was taken out and placed in another flask, and heated in a water-bath of 60 to 65° C. for four hours. All the carbon disulphide having then disappeared, a solution of nitrate of soda was poured over the dung. Another sample of dung was treated in exactly the same way, except that it received no carbon disulphide. In four days the unsterilised dung reduced 56 per cent. of the nitrate, whereas the sterilised solution had effected no trace of denitrification. In three days more, the whole of the nitrate was denitrified

by the unsterilised dung, while denitrification was only just beginning in the sterilised sample. In 14 days from the date of placing the nitrate and sterilised dung together, 12 per cent. of the nitrate had been reduced, augmenting to 19 per cent. in 25 days. The carbon disulphide had evidently cleared the dung of the denitrifying bacteria, whose subsequent recurrence was due either to spores unharmed by the carbon, or else to immigration from the atmosphere.

The conclusion is inevitable that nitrates, natural or artificial, are rapidly destroyed by organisms contained in dung and also to a lesser degree in the soil. Maercker found that numerous samples of farmyard manure from dung-heaps gave much the same results as those from pure fæces. The wheat straw found in farmyard manure, when chopped up and applied to oats, reduced the yield by 89 per cent., and the aggregate yield of three crops of mustard, grown in succession in the same pots, by 74 per cent. Various mixtures were also tested, with the result that the crop was least and the loss of nitrogen greatest in the mixture that contained most straw.

Straw was also found by Wagner to possess very strong denitrifying influences. Thus complete denitrification of nitrate of soda was effected in seven days by means of straw and dung, against 12 days when dung alone was used. Again, an addition of straw to rotted dung denitrified the nitrate in eight days against 22 days for the dung alone. In another series of experiments Wagner found that in a mixture of garden soil, water and nitrate, denitrification was not quite completed in 400 days, whereas the addition of chopped straw completed it in six days. Corroborative results were obtained when straw was given to crops of mustard.

CAN THE DENITRIFYING ACTION OF DUNG BE PREVENTED?

Maercker and Wagner both found that the denitrifying ferments disappear to some extent with age. Maercker prepared a series of pits filled with soil, to all of which was added fresh horse-dung. In one case he applied nitrate of soda along with the dung; in another case it was withheld for fourteen days, in another for twenty-eight days. In each case mustard was sown at the time the nitrate was applied. In the first sample the dung reduced the yield (as compared with that from nitrate alone) by 38.8 per cent.; in the second case the dung reduced the yield by 52.4 per cent.; while in the last case—when the nitrate was given 28 days after the dung—the crop was reduced by 54.4 per cent. Evidently four weeks were not enough to modify the harmful effects of the dung, which were worse after 28 days had elapsed than before.

Directly the first crop of mustard had been reaped, a fresh supply of seed was sown in all the pots, nitrate of soda being simultaneously applied. In one case the yield was reduced by 8.2 per cent.; in another by 5.7 per cent.; while in a third case an *increase* of 7.1 per cent. was obtained by the mixture of dung and nitrate than by nitrate alone.

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Correspondence and matter for publication to be sent to Editor, this paper, Coonoor.

After reaping, a third crop was sown (the intervals between the three sowings being about five weeks) and again nitrate of soda was simultaneously applied. The results were practically the same as obtained in the second crop, if anything a trifle greater loss ensued.

Wagner experimented in the same direction, and showed that the denitrifying bacteria are much less energetic in old than in fresh dung. He prepared cemented pits, into each of which half ton of fresh horse-dung was placed. From these pits samples of dung were drawn every fourteen days, and the effects of the bacteria present tested on flasks containing solutions of nitrate. In one series the pits were turned over every seven days, in another once a fortnight, but no difference could be observed. Confining ourselves to one series—where the dung was turned once a fortnight—we find that the sample fourteen days' old took thirteen days to denitrify the nitrate solution; a month old sample took nineteen days; a six weeks' sample took thirty-one days; a two-months' sample forty-one days; a ten-weeks' sample took sixty-five days. This supports the well-known agricultural value of well-rotted over fresh manure. Wagner demonstrated this with vats. Nitrate of soda alone produced an average of 244.3 grammes, while dung of equal nitrogen value produced 177.0 grammes when fresh and 243.3 grammes when rotted.

Wagner and Maercker have been and still are occupied with an extensive series of experiments into the conservation of the nitrogen and organic matter of farm-yard manure, with results, says Professor Somerville, of the highest interest and value. Briefly, although great loss of elementary and combined nitrogen takes place in dung heaps, the loss is almost entirely confined to the nitrogen of the urea, the albuminoid nitrogen of the solid faeces and straw being dissipated to a very slight extent. As, however, the nitrogen in the urea alone is of much value, the consolation derived from the stable form of nitrogen in the solids is not great.

REFERENCE TO ENGLISH RESULTS.

The laboratory experiments described above are supported in a striking manner by the field experiments conducted in recent years in England. Year after year, the addition of artificials to dung failed to increase the crop, and in some instances have positively decreased it. The conclusion arrived at was that farm-yard manure in average quantity gave the crops all the food they required. Now, however, a flood of light has been thrown on the subject, showing that the denitrifying bacteria attack the nitrates and dissipate their nitrogen. This action moreover is not confined to nitrate of soda, but is met with almost proportionately in sulphate of ammonia and organic manures. Further, the addition of even purely phosphatic and potassic manures to dung has often resulted in no increase of crop whatever.

It has already been pointed out that the denitrifying action of dung decreases with age, but Wagner has shown that various substances, such as superphosphate of lime and kainit, have the power of greatly intensifying and prolonging this deleterious action. Cemented pits of half ton each were filled with dung, and in certain cases approximately three parts of the substances referred to were carefully mixed with every 100 parts of dung. The dung was turned every ten days. In ten weeks samples were drawn and used to denitrify a definite amount of nitrate of

soda. On the average the pure dung samples took 63 days to effect complete denitrification, while those mixed with supers and kainit only took 41 and 37 days respectively. After 112 days had passed, fresh samples were drawn and tested for 56 days. The pure dung only reduced 8 per cent. of the nitrate, while the superphosphatic and kainit dung had reduced it by 40 and 66 days respectively.

In another series of experiments, where the dung was turned, it was found that samples taken at the end of storage of eleven months denitrified as follows:—

Dung without any addition completely denitrified in	31	days
" with addition of superphosphate completely denitrified in	22	"
" with addition of kainit completely denitrified in	20	"

This 3 per cent. addition is the proportion adopted by farmers when they use 6 cwt. of phosphates or kainit with 10 tons of dung, a very usual mixture. This seems to explain, says Professor Somerville, why he found in Northumberland that, in experimenting with 12 tons of dung per acre, the average crop of swedes on nine farms was 2 cwt. per acre heavier with $2\frac{1}{2}$ cwt. of supers than when 5 cwt. were used. In another year, in Durham, the average crop of swedes on eleven farms was 14 cwt. greater per acre with the smaller quantity. On the average of nine farms in Cumberland, Durham and Northumberland, the crop of swedes was $\frac{1}{4}$ cwt. per acre heavier with 5 cwt. compared with $7\frac{1}{2}$ cwt. In the same year (1895) on the same farms, $2\frac{1}{4}$ cwt. of dissolved bones produced a crop 4 cwt. per acre heavier than that grown by a double quantity of the same manure. In all these cases the artificials were used with equal (i.e., 12 tons per acre) dressings of cattle manure.

Why the addition of phosphoric acid and potash should intensify and prolong the activity of the denitrifying bacteria in dung has not been explained. It is supposed that the minerals are used as food by the bacteria. The German investigators, whose work has been reviewed here, have shown that the organisms can be largely destroyed (a) by frequently turning dung-heaps, so as to induce rapid fermentation, oxidation and a high temperature, and (b) by adding certain substances, of which the most effective were found to be sulphuric acid and copper sulphate. And conversely certain of our commoner artificial manures must be placed amongst the number of those substances that favour the growth and development of these organisms.

The conclusions to be drawn from the above by planters are obvious. Keep your cattle manure as free from straw and bedding of any sort (presumably) as possible; never apply it when fresh, but keep it as long as possible—under cover so that it may be perfectly rotted; apply it alone and never use nitrates, phosphatic or potassic manures in conjunction therewith.

GENERAL NOTES AND ARTICLES.

An interesting interview with Mr. G. L. Acworth, ex-Chairman of our U. P. A. S. I., was recently published in the *Times of Ceylon*. We note that the agitation amongst our planting community was started by a letter from the South Travancore Planter, Mr. Clarke, in 1894. Mr. Acworth is of opinion that a compensating export duty on the exchange left free by Government, would have to

a great deal more than the 5% proposed by the present Chairman of the U. P. A., more like 10 to 15% in fact. However, the tax levied by the present high exchange is from 40 to 60 per cent.; it would be worth our while to pay even 20 per cent. direct export duty. He thinks the collapse of the present high exchange inevitable, and in getting up the agitation to open the mints, Mr. Acworth declares that the West Coast merchants at any rate would refuse to join the planters. The real support will come from the producing classes all over India; growers of tea, coffee, indigo, opium, wheat, rice and cotton all compete at present against silver countries. They are therefore all subject to the same tax.

Plantains.

A Mysore planter wishes for all the information that we can give him on the exportation of plantains to England, both in their green state and manufactured into flour. With regard to his first query, we are unaware of any instance of Indian plantains having been placed on the English market, either in bulk or flour. Certainly in bulk, the extremely high rates of freight, coupled with the heat of the voyage, would render any prospects of profit extremely slight. Nothing, we believe, has yet been done in India in either the manufacture or export of plantain or banana flour. This product is an experimental one, it must be remembered, and it would be highly unsafe to make any estimates as to profit without figures based on actual consignment. The mode of its manufacture has already been described in these columns. Briefly, the fruit is picked green, and then dried thoroughly in the sun or with artificial heat. The skin is then removed, and the dry chips ground into meal by means of a suitable mill. Another way of preparing them is in the form of "figs." Plantains are kept, on the tree preferably, until dead ripe. They are then thoroughly dried and pressed into boxes in much the same way as the ordinary dried fig of commerce. The industry is principally confined to Jamaica, but Queensland is said to be bestirring herself now in this direction.

We would advise our correspondent, if he takes more than academic interest in the subject, to procure a few bunches of green plantains in the nearest bazaar and convert them into powder the best way he can. To ensure their preservation during the voyage, the meal itself should be exposed to great and lengthened heat; then, when cool, packed in air-tight canisters or tea-chests (lined with paper inside the lead) and sent home to, say, Messrs. John Haddon and Co., or Thos. Christie, or other enterprising brokers. He should ask for samples of the meal sold by Jamaican planters to compare with his own, and, in short, go practically into every detail. Once the manufacture and prices are more or less fixed, he should go into the question of the relative profit of buying or growing the raw product. For the first year, we should strongly advise him to confine his operations to the bazaar and not to attempt planting on his own account.

It is with great pleasure that we note "A. B. C.'s" interest in the matter, and are sorry we cannot help him further in the matter. Were there a royal road to the successful undertaking of new products, we would gladly point it out. Personal experiment, and personal work and worry, are, alas, the only factors that will lead to success in the plantain, as in all other new, and old, industries.

LETTERS TO THE EDITOR.

TEA FLUFF AND COBWEBS.

DEAR SIR,—I sent out a consignment of Dust Tea for local sale in which was one or two tiny specks of *Tea* "fluff." The merchant writing to me informs me that some customers had returned the tea, complaining that there were cobwebs in it!

"PLANTER."

[The first part of your letter has been omitted.—*Vide* our leading article in this issue.—ED.]

FLUSH WORM IN TEA.

DEAR SIR,—If any of your readers could tell me the cause of, and suggest any remedy for, flush worm in tea, I should feel deeply grateful.

16th November 1897.

"FLUSH WORM."

[This pest is very common on the Nilgiris, this year it has been particularly bad. The usual treatment is for the pickers to squeeze the affected leaves between their finger and thumb, thus killing the worm inside. More information is urgently called for on the subject.—ED.]

A TEA-MACHINERY COMMITTEE.

SIR,—It seems to me that if a few members of the Local Planters' Association would form themselves into a Committee of Enquiry in order to investigate the claims of the ever-increasing improvements in tea machinery and consequent alterations or modifications in manufacture, the planting community would be greatly indebted to their kindness. Can you, Mr. Editor, do nothing in that line without giving rise to the suspicion of inspiration? With reference to the last great invention of the oxydizer for fermenting our teas, the authority of results on the Lungla Estate seems given and accepted on every hand, but on reference to that estate for confirmation, the reply received is that no report on results had yet been received from London. In spite of such a paucity of reliable statistics to enable one to form an opinion regarding the machine, it seems the inventor is likely to have his hands full of orders!

"INDIAN PLANTER."

[Noticed elsewhere.—ED.]

COMMERCIAL VALUE OF PLANTAINS.

SIR,—*Re* my former query about the exportation of plantains from India, and the making of plantain or banana meal, is there any actual instance on record in which plantains exported from India have been placed on the English market either in bulk or sample and the nett profit obtained therefrom?

If the experiment has not actually been tried, perhaps you could kindly ascertain whether it is practicable to export in bulk from India to England and the profits likely to arise from such a transaction.

Perhaps some idea could be obtained *re* the practicability of export by comparing the probable number of days to be occupied in transport with the time occupied in transport from plantain-exporting countries.

As the subject will probably prove an interesting one to many readers of *P.O.*, I hope that you, Mr. Editor, and the many readers of your paper may be able to throw some light on the matter.

Again, there is plantain flour. How is it made, and who are the makers and sellers of it?

Can any direct information be obtained on the subject.

SAKLASPUR, 15th November 1897.

"A. B. C."

[Noticed elsewhere.—ED.]

FORKING TEA.

SIR,—Your querist "Planter" recently asked for statistics giving the result in yield and quality of tea followed by trenching or forking during monsoon or growing season. Being unable to give any statistics, I have waited a bit to see if any answer would be forthcoming. For lack of better, I venture to offer my opinion, backed only by observation. I have found that a good nine-inch forking on unforked soil has been followed by a marked increase in flush. Trenching, as far as I have observed, has an opposite result, doubtless due to the hacking of the large sub-soil roots on whose well-being generally depends that of the bush. Comparing unforked tea on one estate with another where forking is the rule throughout the year, I have found that the depth of feeding rootlets in the latter soil is far greater than in the unforked tea. The yield of the forked tea was decidedly greater, about 50 per cent., than that on the unforked tea, which latter by the way was mostly trenched and mamoty-weeded. Again the quality of the forked tea was many degrees better than that of the other, though against the above must be set differences in soil and methods of pruning, both, I should say, much in favour of the forked estate.

I have observed, on forked land, the feeding rootlets of tea to go down about a foot or less, according to the quality of the soil. In unforked land I have never observed them below six inches, except in exceptionally good soil.

As far as I can judge, the great stress laid by our Ceylon brethren upon avoidance of all disturbance to the roots of the tea bush lies rather in the danger that must consequently arise from wash of soil than the disturbance of the roots *per se*.

But there are ways and ways of forking. One consists in completely overturning the clods, thus effecting what is called "clean-forking," I believe, on coffee estates. In other words, all weeds are buried beneath the upturned clod. Excellent as this may appear to be, there is a great danger of forcing the large sub-soil roots, or water-roots, upwards and out of the soil. I have seen striking examples of the great damage thus caused, resulting in the dried roots partially killing that side of the tree. I prefer the other plan myself, simply inserting the fork to its full depth, and loosening the soil, without overturning the clod.

Where practicable, I should be inclined to follow the example of Upper India, where the *young fields* are deep hoed, cutting off at the outset any of those strong side roots that might subsequently interfere with cultivation.

"TEA ROOT."

CROP ESTIMATES.

DEAR SIR,—In former times, managers used to estimate their crops very accurately. Agents and owners relied on their estimates with confidence, and would have been surprised and disappointed if a deficiency of crop of so much as ten per cent. had occurred. Such short falls as have become quite frequent of late were quite unknown. Estimates were generally received and settled about July, when the fruit showed up. But such a thing as a deficiency of 30 or 40 per cent. being first discovered after crop had commenced was never heard of until quite recent times. Such disappointments are now, however, unfortunately but too common. Is it that the present generation of planters are less able, or more careless than their predecessors? Certainly not! Even those old planters who, in former days, used to be so accurate, have since 1870 been so far out in their reckonings as their younger neighbours. I have in mind a recent instance of a crop, originally estimated by a very careful manager of great experience, subsequently confirmed by an old stager, who knew the estate intimately, and again by a visitor who prides himself that he is never deceived, yet this crop fell

short by 50% of the estimates so made and confirmed, and the deficiency was not suspected till the gathering began. The simple fact is that of late years, leaf disease and adverse seasons have so impaired the strength of the trees that they cannot now mature their fruit as they used to do. Original estimates, doubt not, are as accurate now as they were formerly, but there is now a continuous shedding of the young berries which is often quite unperceived and unsuspected until revealed by early gatherings. The berries in the cluster become reduced in number as they increase in size. As the first fruits swell, the failure of that which should follow eludes observation, until gathering begins, when the astonished manager discovers that there is little or nothing left behind.

Such serious disappointments as have lately occurred but too frequently are extremely embarrassing to agents and financiers, especially when they are revealed at so late a period of the year, and they beget distrust as well as confusion. Hence the paramount importance of adopting such means as we possess for preventing them; and this may assuredly be done by ascertaining the actual fall of the immature fruit. The method I adopt and confidently recommend is to select in each field two or three branches, on different trees, representing the average bearing branches of the field, and to count the berries in each of these selected branches from time to time, beginning a month after the blossom and continuing throughout the season to recount them every fortnight. Each selected branch should be marked and numbered, and a careful record should be kept of the result, which will indicate infallibly the loss of premature fall of fruit, and enable the manager to foresee the proportion of the whole which he is likely to harvest. The counting of berries should be continued until near the end of the crop, and should be done by the manager himself, or a very trustworthy assistant, who, as crops begin to ripen, should always precede the pickers and gather from the selected branches all the ripe berries, taking due account of the number gathered. Each successive counting will tell its tale, and a serious failure of the fruit must become evident quite early in the season. I think it probable that the method of counting the berries on selected branches in each field might serve as a very useful means of forming original estimates of crop, but I have not tried it with that object. The ordinary method of estimating has been proved by long experience to be sufficiently accurate unless disturbed by an abnormal fall of fruit. I have therefore confined my attention to the method for the latter purpose only, and have found it effectual. How indeed could it be otherwise?

"OLD PLANTER."

COFFEE.

The Gold Coast.

During the last two years, we learn from the *H. & O. Mail*, the Government has introduced machinery for pulping and curing coffee, and consignments of both coffee and cacao from the Gold Coast have been forwarded through the Colonial Agents for sale in the London market. This plan affords the best means for testing the commercial value of the produce, and the result shows that coffee and cacao can be grown in West Africa capable of realising good prices in European markets. Much, however, still remains to be done to induce the natives to cultivate and cure their produce in a satisfactory manner.

The Market.

Further very heavy receipts, and an increased estimate of the present Brazil crop, the amount now given being 9,000,000 b

has caused considerable pressure to sell, says the *P. M. Review* of 30th October, and a much larger business has been done in the terminal market, resulting in a decline of fully 3s. per cwt. The quotation for good average for March delivery is now 30s. 9d., while the price in Santos is 31s., cost and freight. Such a price, even with the present low rate of exchange, can hardly be remunerative to the growers, and therefore we might look for a decreased production in the near future; but as new plantations have been laid down in recent years, there is not much prospect of it. The decline in the terminal market has produced a flat tone at the auctions, and although supplies have been small, quotations have given way for medium qualities from 1s. to 2s. per cwt., but fine colory parcels have fully maintained their values. Recent shipments of Nyassaland have sold with considerable competition at very full prices.

LONDON COFFEE RETURNS.

	HOME CONSUMPTION.		EXPORT.		STOCK.	
	1897	1896	1897	1896	1897	1896
For the week ended Oct. 23, 1897.	Tons. 276	Tons. 271	Tons. 427	Tons. 456	Tons. 10,501	Tons. 8,308
For the 42 weeks ended Oct. 23, 1897.	11,586	11,885	18,241	17,794	—	—

Nyassaland. A correspondent to the *Central African Planter* holds that the absence of curing works in the country seriously detracts from the value of the coffee. *Pour faute de mieux*, Nyassaland coffee is shipped home in parchment, and is finally cured and garbled in London. Labour, however, being so expensive at home, the coffee is not properly garbled. We are inclined to agree with the writer, and our contemporary itself, that Nyassa coffee is, in itself, perhaps equal to the best grades of East Indian. Our contemporary waxes very wroth with us and with the *Ceylon Observer* for allowing derogatory notes on the African coffee industry to appear in our respective columns, more especially with regard to a correspondent asserting that he had noticed leaf disease present on certain plantations he had visited. Let not our African brethren be dismayed: friend Hemeleia will visit them, too, in its own good time. A writer to the *C. A. P.* draws attention to the fearful amount of damage done to the grevilleas in the Cholo District planted out as coffee

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Seed cured under Messrs. Sutton and Sons' advice.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs.6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE,
Shencottah.

shade. Luckily they only seem to attack the young plants. *Albizia Moluccanas*, by the way, perhaps by reason of their towering high above the coffee, have been studiously left alone.

TEA.

Japan.

In a report recently issued by the Department of Agriculture and Commerce in Tokio, it is stated that the area under tea is decreasing, but the quantity produced is steadily increasing, showing an improvement in the methods of cultivation.

New-make Chinas.

In a recent number of the *London Grocer* we find that this season's arrivals of machine-made Chinas have resulted in great disappointment to the promoters of the new methods. Improved colour and strength have been obtained it is true, but with the result of even lower prices than for old-make Chinas. The fact is, that China tea is not wanted in England to any extent, but where it is required, it is for its own intrinsic merits and not as a more or less colourable imitation of Indians or Ceylons. Yet it must not be forgotten that both China and Japan are increasing their trade out of England year by year, though not so fast as British-grown tea.

Mr. Acworth's views on tea in South India.

The Ceylon papers are ever eager for interviews, and the *Times* naturally seized the opportunity for interviewing Mr. Acworth when in Colombo *en route* for a long visit home. The extension of tea in Travancore is proceeding at a terrific rate, says Mr. Acworth, and also in the Wynaad. We learn with interest that he is one of a Syndicate to take up 2,000 acres of land in Coorg for tea, which is to be opened up in earnest two years hence, though a beginning is to be made this year. This land is from 3,200 to 3,500 feet elevation, and was given the Syndicate as a free gift from Government, no taxes moreover being leviable for five years. The greater part of the land is old abandoned coffee-land.

New Tea Machinery.

"Indian Planter's" suggestion to form a "Tea-Machinery Committee" to investigate improvements in machinery and consequent modifications of manufacture is an excellent one. For South Indian planters the matter would be extremely simple. Each district should form a sub-committee, collect information and forward it to the U. P. A. Tea Committee (to be formed) for dissemination. A start could easily be made say in "Indian Planter's" own district. He has only to propose it at the next meeting of his district association for it to be carried *nem. con.* Three or four men with "go" would be quite enough, with the most energetic as secretary. Naturally, it would not take long to exhaust the subject in the present state of the tea-industry in South India. But let them be content with this to begin with, for the success that they are bound to achieve will spur them on to find suitable means of going further afield. The matter is certainly one of urgent importance and one that we shall gladly do all in our power to further, and freely offer our columns for the publication of any information connected therewith.

The Market.

INDIANS.—The supply continues fairly large, said the *P. M. Review* of 30th October, and although the demand has been somewhat less active, no change of importance has taken place, excepting in the common descriptions. A considerable proportion of the quantity offered has been of these kinds, and clean sweet teas are more easily obtainable at from $5\frac{1}{4}d.$ to $5\frac{3}{4}d.$ than for some time past. Although the prevailing idea is that the outturn of the crop will not exceed that of last year, the proportion of these grades will probably be larger, and this will, no doubt, have a steadying influence on values. On the other hand, as there is likely to be a falling off in the Ceylon supply, it would appear that current rates are about as favourable to buyers as they are likely to be. The teas showing the best value, and which are being largely dealt in, are the medium kinds, a good assortment of which is offering, and, judging from the activity of the demand, the trade are fully alive to the exceptional value obtainable. For the better sorts there is a steady inquiry and a fairly good business has been done, the quantity brought forward has been larger, and prices show no change of importance. Most of the growths continue to improve in quality, this being very marked in some kinds compared with the earlier shipments. At the public sales there was good competition, and 42,588 sold out of the 46,576 packages brought forward, while a good portion of the quantity withdrawn has since been disposed of.

DISTRICT ASSOCIATION.

LOWER PULNEYS.

PROCEEDINGS of the Postponed Annual General Meeting held at the Dindigul Club on Saturday, 2nd October 1897. *Present*:—G. Mengel, Esq., F. R. Gerrard, Esq., H. Rowland Newport, Esq., W. H. Gerrard, Esq. (*Vice-Chairman*), Howard Newport, Esq. (*Honorary Secretary*), W. E. Underwood, Esq. (*Visitor*), T. J. Ferguson, Esq. (*Visitor*). Mr. W. H. Gerrard, Vice-Chairman, opened the Meeting.

Read letter from L. J. Creed, Esq., regretting his inability to be present at the Meeting. Mr. Creed resigns his Membership of the Association on giving up his interests in Coffee Planting and leaving the District. The Honorary Secretary proposed a vote of thanks to Mr. L. J. Creed for his services as Chairman during the greater part of last year, and regretted his having left the District. Seconded by Mr. F. R. Gerrard.—*Carried*.

Read letter from Mr. Twigg, Collector of Madura, regretting that he would be out in Camp in an opposite direction at the time of our Meeting. Mr. Morgan being unwell could not attend.

The Chairman called on the Honorary Secretary to read the Annual Report.

1. *Report*. The following report was therefore read:—

MR. CHAIRMAN AND GENTLEMEN,—This Meeting closes the third year of our existence as a District Association. I regret I cannot say we have had a prosperous year; in fact it has been a hard time for our District for many reasons. Prospects are fair, however, for the coming year, and we can but hope for better times during the next twelve months. With regard to the work we have had in hand, we are, I am sorry to say, not much more forward than we were at last year's Annual General Meeting.

Roads and Communications are still our most important subject. Last year I gave a *résumé* of the progress of matters in connection with the *Ahtoor-Kodaikamal Ghat*, which ground I need not go over again. After the Resolution passed at last year's U. P. A. Meeting, we sent up our Resolution to the Secretary to forward to headquarters, but were told that he could only forward a general Resolution on this subject, and could not make any special references. We heard also that we were wrong in concluding that a grant had been sanctioned for the construction of this road last year, though we heard later that the matter was under consideration by Government. We decided that it was of no use bringing the matter up

before this year's meeting of the U. P. A., considering the straiter condition of Government finance, owing to Famine, Plague, etc., and only asked that the matter might not be lost sight of, but allowed to stand over for another year. As H. E. the Governor is to be in this District shortly, I do not think we should let the matter pass without sending a Deputation to him while he is on the spot and can make local enquiries even if he has not the time to see to parts in question of the country personally.

Railways.—Nothing has been done either with regard to Dindigul-Pothanur or Palghât Railway, which subject was brought up at the last U. P. A. Meeting. This matter might, I think, be also included under the heading of Roads and Communications if it is decided to send the above-mentioned deputation. H. E. Sir Arthur Havelock.

Dispensary at Ardaloor.—In consideration of our original Resolution that Government should be asked to open a small Branch Dispensary at Ardaloor, Surgeon-Major F. C. Reeves, who was at that time District Medical and Sanitary Officer of this District, suggested the removal of the Thandigudi Dispensary to Sholakas, which suggestion was approved of by the Taluq and District Board, but was quashed on being again referred to the Dindigul Taluq Board this year. In doing this the President of the Taluq Board made no mention of, or reference to, our original Resolution; the matter therefore remains where it stood, no definite reply having been received to our request.

District and Taluq Boards.—The Lower Pulneys are represented on the Dindigul Taluq Board at present by myself. In reply to a request to the President of the District Board, Madura—backed by the Kannan Devan Planters' Association—that we might be also represented on this Board as there are at present no Members from the Hill Districts, we were notified that no vacancy would occur in June, when the President would take our claims into consideration. The President has not, as yet, made any appointment and has apparently either forgotten the matter, or considered our claims as representation not sufficiently good, and these two large planting districts are therefore still unrepresented in any way at the District Board Meetings.

Coffee Stealing Act.—In addition to those rules drawn up by the Superintendent of Police, which were before you at the last Annual General Meeting, some additions were suggested, and were taken into consideration by the Superintendent of Police. Books of passes have been printed, and we have now before the Meeting some correspondence on the subject to discuss. Coffee thefts were of somewhat frequent occurrence on the Sirumallais during the latter part of last year, and the judgments in two or three cases were obtained by the Association, who decided to watch the development of the cases.

Statistics of artificial manures and the ordinary acreage statistics have been sent in to the Secretary, U. P. A.

Postal Arrangements.—With regard to the Post Office at Ardaloor nothing further has been heard, and although the Superintendent of Post Offices did not see his way to giving us the direct communication between the Branch Office at Ahtoor and the Head Office at Dindigul that we asked for, we have both in this case and in the case of the Branch Office at Virupatchy had appointed men as Post Masters who understand and can read and write English.

Lady Birds and Green Bug.—During the year this matter has come to a head, and the United Planters' Association has, I am glad to say, taken the matter up, and has come to see the grave necessity for speedy action. As this matter is still, so to speak, *sub judice* and is moreover gone into very fully elsewhere in these Proceedings, I need say no more here.

U. P. A. S. I. P. E. C.—The Proceedings of this year's Meeting of the U. P. A. have been marked by the excellent and thorough report of the S. I. P. E. C. We must indeed acknowledge ourselves exceedingly fortunate in having had our grievances so carefully and impartially enquired into at the hands of such able and energetic Commissioners. We were not in a position to increase our one vote in the U. P. A. to two, as we had hoped earlier in the year, and the voting arrangements having now been altered, as I have already explained to you, we shall be able to send up more than one Delegation if we wish to.

Membership.—We started the year with 15 names on our Roll, exclusive of Honorary Members; during the year three Members have resigned, and we had to chronicle the sad death of our old planter. Including those that have just joined us at this Meeting

we have four new Members for the year and two new Honorary Members; thus we have now on our Rolls fifteen Members and six Honorary Members.

Finance.—I am laying on the table copies of our Balance Sheet for the year and the lists of subscriptions by Members of our Association to the U.P.A.S.I. Trust Fund and Famine Fund.

Coffee Stealing.—Thefts were prevalent on the Sirumallais during the latter part of last year, and although several thieves were caught and handed, difficulty was experienced by the Police in obtaining conviction.

Labour Supply and Crops.—If only our crops had been as plentiful as our Labour Supply for the year, we should have little to grumble at. Unfortunately owing to unseasonable rains in February and to the terrible effects of green bug last year, our crops have been very much below estimate. This is practically speaking the cause of three of our Members having left the district. We have had considerably more than the average rainfall for the year. I have now but to place my resignation in your hands, and I would add, Gentlemen, that I do not stand for re-election.

HOWARD NEWPORT,

Honorary Secretary,

The Lower Palnays Planters' Association, Dindigul.

The Chairman proposed the adoption of the report as it stood, but remarked that with reference to the Post Office at Virupatchy an English-speaking Post Master had not, as a matter of fact, been appointed. The Accounts having been examined, were passed.—*Carried.*

Mr. F. R. Gerrard suggested that the election of office-bearers be proceeded with at the close of the Meeting. Seconded by Mr. Newport.—*Carried.*

2. *Roads and Communications.*—(a) *The Ahtoor-Kodaikanal Ghat Road.*—Read letter from Mr. Twigg saying that he would be pleased to arrange for a deputation to His Excellency on his visit to Madura if we decided to approach His Excellency on the subject. Discussion in Committee. Proposed by Mr. W. H. Gerrard: That we, as an Association, approach H. E. the Governor at Madura on his coming visit in re the Ahtoor-Kodaikanal Ghat Road, and that the following gentlemen comprise the deputation:—Messrs. Howard Newport and Fred. R. Gerrard. Seconded by Mr. Mengel.—*Carried.*

(b) *The Dindigul-Pallakanoth Road.*—Mr. F. R. Gerrard said that this road was in a very bad state, and owing to the late heavy rains is almost impassable in parts. Statement supported by Mr. Howard Newport. Mr. Underwood said that some repairs were being carried out on the road in question, and that he had submitted an estimate for extensive repairs which has been ordered to be brought up again by the District Board.

Mr. F. R. Gerrard proposed: That the District Board are now practically re-metalling the first seven miles of the Dindigul-Pallakanoth road, and that as at the last meeting of the Board they recorded an estimate of Rs. 6,000 for continuing the metalling to Pallakanoth, the attention of the District Board President be called to the importance of carrying out this work. Seconded by Mr. Newport.—*Carried.*

(c) Mr. Howard Newport asked Mr. Underwood whether he knew of the mile or so of road between the Ahtoor village and the Government road near Shempatty, and asked whether he thought there was any likelihood of its being kept up by the Board. The road in question was a short one, but a good deal of traffic went over it. It was not at present kept up and was now, as it usually is in wet weather, all but impassable for country carts. Mr. Underwood replied that he would go and see the piece of road in question and would let the Association know his opinion.—*Recorded with satisfaction.*

The Dindigul-Pothanur Railway.—Mr. Ferguson said:—In my opinion there is no chance of your getting the Madras Railway to construct the line to Pothanur The South Indian Railway is the most enterprising line in Southern India, and if this branch is opened up, we are much more likely to get it done by the S. I. Ry., as the narrow gauge would represent so much less invested capital, and the S. I. Ry. is a well-to-do Company. Your line should run round the base of the Annamallais so as to tap all the present and prospective traffic, which will be very considerable, and join the Madras line at Palghat. It would run through Palni, Udamalpet (at the foot of the road to the Travancore Tea and

Coffee Estates), and straight on to Palghat, following the old road through Palni, Udamalpet, Comungalam, &c., to Palghat, a distance of 133½ miles; while from Dindigul to Olavakode junctions *via* Pothanur it must be 125 miles *at least*, so the Palghat line would be much the cheaper for the carriage of coffee, manures, etc., and there is a large carrying business in timber, cotton, etc., along the old, direct road to Palghat.

Laid on the table Pamphlet received from the Traffic Manager, M. R. C., *re* the Railway in question. Discussion in Committee as to the advisability of approaching H. E. Governor on the subject during his coming visit to Madura.

Resolved—that a petition be got up and forwarded to the Chief Secretary to Government at an early date, urging the necessity of opening up the Branch Railway between Dindigul and Palghat. Proposed by Mr. Howard Newport—that Mr. W. H. Gerrard be asked to undertake this and to draw up and obtain signatures (with the help of Mr. Ferguson of Calicut) from the towns along the route and subsequently present the petition to the proper authorities. Seconded by Mr. F. R. Gerrard.—*Carried.*

3. *U. P. A. Finance.*—Read Circulars dated 12th, 13th, 14th, 15th and 17th September 1897.—*Recorded.*

Resolved—that as much as possible be collected by an assessment of 1 anna per acre under cultivation, and be forwarded to the U. P. A. as our subscription for the current year. And the usual subscription of 12 rupees per annum asked for from each Member which is necessary for the ordinary expenses of the Association remain as heretofore.

The U. P. A.—Mr. Howard Newport then read his report of the U. P. A. Meeting which he attended as Delegate for the L. P. P. A. on 9th August 1897. *Resolved*—that this be printed separately and included in the Annual Proceeding Book. *Read Circulars*, dated 1st July, 17th August, 24th August and 16th September.—*Recorded.*

5. *S. I. P. F. C.*—*Read Circular*, dated 17th August 1897, and draft letter from U. P. A. Chairman to Chief Secretary to Government, dated 13th August 1897.—*Recorded.*

6. *Coffee Passes.*—*Read letter* from Superintendent of Police, Madura District, dated 4th September 1897, and Honorary Secretary's reply, dated 22nd September 1897. The Honorary Secretary said that the Superintendent of Police had not mentioned either the price of the book nor the number of pass forms each would contain, but that he had heard that the book contained 50 passes and would cost 12 annas each. *Resolved*—that all those who required such Pass books should send in their names to the Honorary Secretary, and that the Honorary Secretary correspond with the Superintendent of Police and obtain as many books as may be needed.

7. *Miscellaneous Circulars.*—*Read Circular*, dated 20th September, *re* Agricultural Chemist. Discussion in Committee. Proposed by Mr. Mengel that this matter stand over till the Proceeding of the U. P. A. General Meeting for 1897 is published. Seconded by Mr. F. R. Gerrard.—*Carried.* *Read Circular*, dated 17th August, *re* Casket. *Resolved*—that any Member who require copies of the *Graphic* containing the photo of the Casket send in their names to the Honorary Secretary.

Read Circular, dated 7th September, *re* Malaria, 15th September *re* Cinchona, and 15th September *re* N. Wynaad P. A.—*Recorded.*

8. *Lady Birds and Green Bug.*—*Read letter* from the Hon'ble Mr. H. Percival Hodgson to Mr. Newport, dated 2nd September 1897, and copy of letter from Mr. Hodgson to the Hon'ble G. Stokes, dated 1st September 1897.—*Recorded with satisfaction.* The Chairman in opening the discussion said—That Mr. Beardsell had been up to the District recently and regretted that he could not stay to be present at the Meeting. That they had talked the matter over and that Mr. Beardsell would like to see the Lady birds introduced. That he thought, however, an Entomologist would be necessary to receive the Lady birds on importation, for, as none of us are Entomologists and do not know their habits, we might not be able to breed them. That although there did not seem to be much difficulty in getting the Lady birds, and although we might succeed in getting the right varieties and bringing them safely to India, an Entomologist would be necessary for breeding them. That if this experiment was not a success, we should be risking a large sum of money. That Mr. Beardsell was willing to join with the majority and fall in with anything they decided to do. Mr. Mengel said that if we go to the expense of going

and getting the Lady birds and bringing them out, it would be best to get an Entomologist. Mr. Howard Newport said that he found himself in a somewhat invidious position in rising to give them his views on this question because, through no wish of his, he had been suggested as the one who should be sent to Australia to bring out the Lady birds, and that before saying more he wished to thoroughly disabuse their minds of the idea that he was in the slightest biased in his remarks or opinion on this account. That with regard to the remarks that had been already made, he was quite in accord with them—that so were the Madras Government and so were the U. P. A. That, however, it must be borne in mind that this matter had been already gone into and that the Madras Government had replied to the effect that they could not make an appointment of an Entomologist without the sanction of the Simla Government. That it was decided in discussion at the U. P. A. Meeting that this would entail considerable delay, and that the question had then come up as to whether we should, since the Madras Government had already expressed its willingness to help us in importation of experimental consignments, get the Lady birds out without an Entomologist. That the U. P. A. had decided in the affirmative, and the resolution they passed was that he had already read to them. That we had all through agitated for speedy action, and that we were still of that opinion and needed it more than ever. That the U. P. A. resolution said “a qualified person,” and that we must cut our coat accordingly and do the best we can. He had suggested Mr. Green’s name, and he still thought that Mr. Green might advise us advantageously even if he could not go and get the Lady birds for us. That the quickest and most satisfactory way to get them was for a planter interested in the matter to go out and collect the insects, at the same time, of course, collecting information. It was possible that the insects might be obtained without any one going out, but that this would entail endless correspondence and a lot of delay, and moreover we should know still less what to do with the Lady birds when we had got them out by post. That the information and experience we want is in Australia waiting to be asked for, and that if any one who knew *anything* of the subject went there, he could learn a great deal, especially if he went with letters of introduction from the Madras Government. He thought very little could be done without the support of the Government. Mr. Stanes had tried to get some specimens, and understood that the authorities were willing to help him, but, when written to a long time afterwards, the latter replied that they had made no promises. The matter was now in the hands of Government, and we could now do nothing further, except arrange our subscription list till a reply had been received to our Legislative Member’s letter just read. He hoped this reply would come soon, that the Green bug was now disappearing and would probably appear again in February as was usual, and as Lady birds commence to hibernate soon after the New Year in Australia, he thought it would be a good time to collect Lady birds, and if the person going out was to be back in time with the Lady birds to attack the Green bug as soon as it appeared, he ought to leave India in November if possible. Mr. Ferguson did not think it likely that the Honorary Entomologist to the Ceylon Government would be able to go to Australia. The Meeting approved of the suggestion that Mr. Green should be consulted if Government gave an affirmative reply to the letter now before them and approved. Discussion in Committee *re* Subscriptions. Some Members wishing to refer to Proprietors it was decided that the list be left open.

9. *Election of Office-Bearers.*—Mr. W. H. Gerrard said:—Before proceeding to elect new office-bearers, I would like to propose a hearty vote of thanks to Mr. Howard Newport for the way he has conducted the affairs of our Association for the past two years. The Honorary Secretaryship has been no sinecure, and the work of arranging everything as well as conducting meetings and reporting has been heavy. That he had not only undertaken all the duties of Secretary, but had spent a lot of time and trouble in going into the question of Green bug and Lady birds, and had also represented us at the U. P. A. Meetings ever since the Association was formed. While regretting that he does not stand again for re-election, we would wish to express our appreciation of his services. Seconded by Mr. Fred. Gerrard.—*Carried.* Mr. Newport replied, and after thanking the meeting for their cordial vote of thanks proposed that Mr. Fred. R. Gerrard be asked to take up the Secretaryship. He had been associated with him ever since he came into the District in 1889, and he was indeed his only white neighbour for several years. He knew him as a sociable neighbour and a pushing and

successful planter and a good business man. He was more (owing to the sad death of our Pioneer Mr. E. de Fondelair) now oldest resident Planter. On the Office-bearers being ballotted Mr. Fred. R. Gerrard was elected Honorary Secretary, W. H. Gerrard, Chairman, and Mr. Howard Newport, Vice-Chairman and Committee man. Mr. Fred. Gerrard replied shortly.

New Members.—Messrs. Ferguson and Underwood were proposed as Honorary Members by Mr. Howard Newport and seconded by Mr. Fred. R. Gerrard. Mr. W. A. Beardsell was proposed Member by Mr. W. H. Gerrard and seconded by Mr. Fred. Gerrard. With a vote of thanks to Mr. W. H. Gerrard, who had conducted the Meeting, the Meeting then closed. Mr. Howard Newport was asked to draw up the proceedings of this Meeting and to edit the Annual book of Proceedings.

W. H. GERRARD, *Chairman.*
HOWARD NEWPORT, *Hon. Secy.*

Laid on the table:—

Proceedings, Shevaroy Planters’ Association, Special Committee Meeting, 19th July 1891.

Do. do. do. Quarter General „ 5th „
Do. Wynaad do. General Meeting 1st Sept. 1891.

L. P. P. A. Balance Sheet for current year and Honorary Secretary’s accounts of monies received for Famine and Trust Funds current year.

E. DRAPER,

GRANDSON OF THE LATE

W. DRAPER.

ESTABLISHED 1838.

WATCH, CLOCK AND MUSICAL

REED INSTRUMENT REPAIRER,

No. 31, BROADWAY, MADRAS.

PER-PHOSPHODINE,

A SAFE, PROMPT AND RELIABLE

PHOSPHORIC REMEDY

FOR

NEURALGIA, Nervousness, Lassitude, Overwork, Brain, Nervous and General Debility, Failure of Memory, Dimness of Sight, Depression of Spirits, Impaired Blood, Liver Complaints, &c.

This is a stable and reliable solution of Free Phosphorus (Unoxidised Phosphorus) combined with Iron, Quinine and Strychnine. It is thus a valuable and highly efficacious combination of nerve tonics, and will be found admirably adapted to the treatment of all ailments which have their origin in nervous exhaustion.

It will also be found very useful in convalescence from fever and other debilitating diseases.

CERTIFICATE. “I honestly believe the Per-Phosphoric sold by E. PLOMER & Co., to be about the best preparation of medicine offered to the Indian Public.”

Rs. 4 per Bottle, packing charge annas 4, extra.

E. PLOMER & CO.

CHEMISTS, &c.,

LAHORE, PUNJAB.

Christmas Cards.

A large and varied selection of Raphael Tuck's artistic Christmas Cards may be seen at ADDISON & Co.'s Stationery and Fancy Goods Stores, Mount Road, Madras. These Cards are of the very latest designs, and are very moderately priced.

Any description of PRIVATE CHRISTMAS CARDS made to order. ADDISON & Co.'s facilities for manufacturing Fancy Cards of special shapes and designs are unequalled in Madras.

DIE SINKING & DIE STAMPING.

Crests and mottoes, Address dies, business dies, carefully and correctly engraved and stamping neatly executed in any colour. Copper-plates for visiting cards engraved at short notice.

At Home Cards, Dinner Invitation Cards, Menu Cards, Ball Programmes, Pencils and Tassels, and any description of Society Printing.

STATIONERY AND FANCY GOODS in immense variety.

A large stock of articles suitable for Christmas Presents.

ADDISON & CO.,

***Stationers and Fancy Goods Merchants, General
Printers, Engravers, and Die Stampers,***

MOUNT ROAD, MADRAS.

MARKET SUPPLEMENT.

SATURDAY, NOVEMBER 27, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (November 5, 1897) says:—A dull tone prevailed at auctions this week and, the supplies consisting chiefly of mixed descriptions, there was very little competition, a considerable proportion having to be bought in.

Only a few parcels of second hand East India were offered and attracted little attention.

Columbian of inferior quality formed the bulk of the catalogues, and this meeting a slow demand, prices ruled easy; a few colory lots, however, realised previous rates.

A weak feeling has been apparent in the Terme market and quotations have given way a further 9d to 1/-; but just at the close the market is rather steadier on slightly reduced Brazilian receipts.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending November 3rd, 1897, says:—Bank rate 3%. Bombay Exchange closes at 1s 3½d. Brazil Exchange 7½d. Rupee paper 3½%. 63½ Silver 26½d per oz.

We have to report a flat market throughout the past week, and an absence of demand for anything except fine. The low middling and ordinary kinds of Columbian are difficult of sale, and from 2s to 3s lower, in some cases even more.

Brazil markets continue extremely quiet at the decline reported last week.

Futures remain flat at the decline, the closing shewing but little change since our last, viz.:—Good average Santos in Havre, March delivery, fcs. 37.75, in Hamburg pf. 30, and No. 7 low ordinary Rio in New York \$5.90.

To-day's London official quotations are:—

	Dec.	March	May	July	Sept.
SANTOS ...	30/-	30/6	30/9	31/-	31/3
We quote:—					
Ceylon, mid. to good mid. 102/ @ 105/					
Do. small to low mid. 79/ „ 100/					
East India, mid. to good mid. 90/ „ 103/					
Do. small to low mid. 72/ „ 89/					
Guatemala, mid. to fine... 80/ „ 106/					
Do. good ord. to low mid... 61/ „ 79/					
Salvador, good ord. foxy greenish... 63/ „ 55/					
Costa Rica, mid. to fine... 83/ @ 110/					
Do. ord. to low middling. 60/ „ 82/					
Jamaica, good to fine ord. 53/ „ 70/					
Do. greenish to fine colory... 75/ „ 125/					
African ... 30/ „ 33/					
Columbian, ordinary ... 42/ „ 50/					
Do. good ord. to low mid... 51/ „ 80/					
Do. mid. to fine .. 81/ „ 106/					

Receipts in Brazil to 2nd Nov. compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
Rio ...	1,920,000	1,513,000	1,086,000
SANTOS ...	3,397,000	2,523,000	1,688,000
	5,317,000	4,036,000	2,774,000

Auctions:—

2,969 bags Columbian, small part sold ...	...	@ 38/6	@ 102/
1,590 bags Nyassaland, chiefly sold ...	...	„ 33	„ 105/6
592 bags Costa Rica, bought in.	...	„ 40/	„ —
205 bags Nicaragua, small part sold ...	...	„ 38/	„ —
129 bags Guatemala, part sold ...	...	„ 47/	„ 55/
110 half-frazils Abyssinian bought in.	...	„ 55/	„ —
113 packages Mocha bought in.	...	„ 47/	„ —
80 bags imitation Java ...	...	„ 55/	„ —
59 bags Vera Paz, part sold ...	...	„ 47/	„ —
46 bags imitation Porto Rico, part sold ...	...	„ 65/	„ —
27 bags Lahat ...	...	„ 52/	„ —
22 bags Mexican ...	...	„ —	„ —
17 bags Bolivian bought in.	...	„ —	„ —
10 bags Central American bought in.	...	„ —	„ —
3 bags Peruvian bought in.	...	„ —	„ —
250 bags Washed Rio bought in.	...	„ —	„ —
175 bags Santos bought in.	...	„ —	„ —

On Quay Terms:—

2,985 bags Santos, small part sold ...	...	@ 34/	@ 37/
250 bags Rio bought in.	...	„ —	„ —

Landed last week ...615 tons. Deliveries ...202 tons. Stock ...10,382 tons.
Do. last year ...202 „ „ „473 „ „ „ 8,037 „

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report dated November 5th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON
FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	624,391 packages.	558,991 packages.	18,491 packages.
1896-1897...	641,248 „	505,012 „	20,667 „

49,955 pkgs. INDIAN } Total 68,652 packages were offered in public
18,589 „ CEYLON } auction this week.
108 „ JAVA }

Deliveries for the past five months compare favourably with the same period last season, while telegrams from both India and Ceylon still indicate the probability of a moderate crop.

Indian. The market for all grades continues very steady at last week's prices. The Official Telegram gives exports to the United Kingdom for the second half of October as 10,300,000 lbs., against 12,620,000 lbs. for the same period last year, and makes the total shipments from the 1st April to the end of October as 88,140,000 lbs., against 89,850,000 lbs. last year.

Week's av. of Tea sold on Garden Account, 1897, 35,110 pkgs., av. 8'80d. 1896, 41,967 pkgs., av. 8½d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam ...	18,777 p 9½	18,425 p 9	206,447 p 10½	208,851 p 10½
Cachar and Sylhet..	8,905 p 7½	12,530 p 7½	111,688 p 7	102,943 p 7½
Chittagong ...	439 p 7	—	3,102 p 7	958 p 7½
Chota Nagpore ...	—	—	667 p 4½	724 p 4½
Darjeeling ...	2,178 p 11	2,819 p 10¼	36,356 p 11½	35,646 p 11½
Dooars ...	4,024 p 8½	6,326 p 7½	55,938 p 7½	57,239 p 7½
Kangra, &c. ...	—	263 7	4,142 p 7½	2,881 p 7
Neigherry ...	120 b 6½	216 p 6½	2,998 p 7	1,494 p 6½
Terai ...	580 p 7½	1,108 p 7	12,290 p 7½	6,031 p 7½
Travancore ...	87 p 6½	280 p 7½	14,851 p 6½	12,638 p 7
Total sold on Garden Account 1st June to date 1897, 448,479 pkgs. av. 9'07d. 1896, 429,405 pkgs., av. 9'43d.				

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor) ...	3½d	4½d	4½d	4½d
FANNINGS. (Red to brown, strong rough liquor) ...	4½d	4½d	4½d	4½d
BROKEN TEA. (Brownish to blackish, strong liquor) ...	6½d	6½d	6½d	6½d
PEK. SOUG. (Blackish greyish, useful liquor). ...	6½d	6½d	7d	7½d
PEKOE. (Greyish to blackish, some tip, useful liquor) ...	7½d	7½d	8d	9d
PEK. SOUG. (Blackish greyish, inferior liquor). ...	5d	5d	5½d	5½d
PEKOE. (Blackish greyish, some tip, inferior liquor) ...	5½d	6d	6d	6½d

Ceylon. With fair competition the market was steady, although in some instances prices were hardly up to those lately recorded. The Official Wire gives exports to U. K. during October as 6,000,000 lbs. against 6,750,000 lb. last year, and the total from 1st Jan. 83,500,000 lbs. against 79,750,000 lbs. The estimate for Nov. is 7½ to 8 million lbs. A for week 9'04d., against 8½d. same period last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 940,525 pkgs., av. 7½d. 1896, 845,598 pkgs., av. 8½d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor) ...	6½d	6½d	7½d	7½d
PEKOE (Ordinary leaf, little twist; fair liquor) ...	8d	7½d	8½d	9
PEKOE SOUG. (Rather bold leaf; indifferent liquor) ...	5½d	5d	6d	6½d
PEKOE (Somewhat bold leaf; indifferent liquor) ...	6½d	5½d	6½d	6½d

Java. Only 108 packages were brought forward from "Perbawatte" realizing 1/- per lb.

Bank rate 3 per cent. Exchange on London three months sight. Calcutta 1/3¾, Colombo 1/3¾.

SUPPLEMENT TO "PLANTING OPINION."

MOVEMENTS of TEA in LONDON (in lbs.) during OCT., from TEA BROKERS' ASSOCIATION FIGURES.

				IMPORTS.			DELIVERIES.		
				1897.	1896.	1895.	1897.	1896.	1895.
INDIAN	...	...	...	19,880,092	23,707,662	19,028,613	11,532,526	11,985,619	11,373,375
CEYLON	...	...	...	5,520,072	5,370,392	5,685,336	8,517,792	8,118,134	7,122,718
JAVA	...	...	...	122,220	164,010	279,370	287,700	369,670	393,400
CHINA, ETC.	...	...	...	3,663,146	3,854,868	3,936,579	2,868,770	4,153,284	4,212,667
TOTAL lbs. ...				29,185,530	33,096,932	28,929,898	23,206,788	24,626,707	23,102,160

FROM 1st JUNE TO 31st OCTOBER.

				IMPORTS.			DELIVERIES.			STOCK.	
				1897.	1896.	1895.	1897.	1896.	1895.		
INDIAN	...	...	...	61,402,703	64,181,884	57,773,199	48,514,900	46,883,767	45,014,094	45,123,015	41,574,480
CEYLON	...	...	...	42,330,904	39,087,998	36,073,694	42,635,664	39,562,674	37,413,756	19,648,420	16,381,690
JAVA	...	...	...	1,467,200	1,757,000	1,725,780	1,733,060	2,147,180	1,828,750	486,360	834,540
CHINA, ETC.	...	...	...	18,554,004	22,785,631	25,822,290	13,851,065	16,823,085	18,368,847	17,706,278	27,164,324
TOTAL lbs. ...				123,754,811	127,812,513	121,394,963	106,734,689	105,416,706	102,625,447	82,964,073	85,955,034

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8'80d.) November 5th.

GARDEN.	Total.	Average.	Broken Crg. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	...	...	...	...	70 b	†7	...	...	...	...	50 b	†5	...	...
Brooklands	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Travancore	...	...	...	...	34	6	34	7½	14	5	...	...	4	5½
Carady Goody	...	...	...	...	...	...	...	...	...	...	...	...	...	...

† Prices marked thus represent the highest offer in the room.

OTHER PRODUCTS.

From the *Chemist & Druggist* of November 6, 1897:—

CARDAMOMS.—A mail report from Colombo states that a brisk business continues to be done for the Bombay and Calcutta markets, and the tendency is towards a steady increase in prices. Several parcels of Mysore changed hands from 2'15r. to 2'60r. per lb., and of Malabar from 1'95r. to 2'10r. per lb. A small parcel of seeds has fetched 2'12r. per lb. We do not hear of any business of importance in London since the last auctions. A fair quantity will be offered next week. There have been several small arrivals.

CINCHONA.—The following figures relate to the exports of cinchona-bark from Java during the month of October, and the ten-monthly periods from January 1 to October 31 of the past five years:—

	1897	1896	1895	1894	1893
	Half-kilos.	Half-kilos.	Half-kilos.	Half-kilos.	Half-kilos.
October	735,000	862,000	1,100,000	952,000	349,000
Jan. 1—Oct. 31.	6,490,000	8,280,000	6,929,700	7,577,000	6,225,000

The exports from Ceylon from January 1 to October 5 have been:—

	1897	1896	1895	1894
lbs.	599,346	881,743	803,834	2,219,688

The Amsterdam public sales of cinchona have been fixed as follows:—January 20, February 24, March 31, May 5, June 9, July 14, August 25, September 29, November 3 and December 8.

CINCHONIDIN.—Howard's sulphate of cinchonidin, in tins, has been advanced to 9d.; in vials, to 10d. per oz.; pure cinchonidin, to 1s. 1d. per oz. Ditto, *Citrate of iron and cinchonidin*, in vials, to 5½d.; in bulk, to 4½d. per oz. Whiffen's cinchonidin is quoted at 8½d. to 9d. per oz. German offers at 8½d. per oz.

HONEY.—A quiet market. *Chilian* honey is tending rather easier, offering at from 28s. per cwt. for fair yellow, up to 32s. 6d. per cwt.

for fine pale. A parcel of *Peruvian* honey has recently changed hands at Liverpool at 21s. 6d. per cwt.

JALAP.—Good Vera Cruz quality is held in London at 7d. per lb. From New York it is reported that there have been no arrivals of jalap at that port lately, and that there were only 50 bales in first hand. The market, however, remains dull, at 9½c. to 10c. per lb. for fair quality.

KOLA-NUTS.—At auction on Wednesday 3 cases, together about 345 lbs., of fair bright *West Indian* (Grenada) sold steadily at 6d. to 7d. per lb.

QUININE.—On Tuesday, when the result of the cinchona-shipments from Java for October became known, the quinine-market assumed a considerably firmer tone, and about 70,000 oz. second-hand German bulk were sold at from 1s. 2d. to 1s. 2½d. per oz. On the following day 1s. 2d. per oz. was paid for about 10,000 oz. B & S, or *Brunswick* quinine. The *Brunswick* agents on Wednesday offered quinine of recent manufacture at 1s. 3d. per oz., either on the spot or for forward delivery, and sales of about 10,000 oz. were reported for either position. To-day, however, there are no further offers for forward delivery by any of the agents, and yesterday's quotation is generally looked upon as only an attempt to influence the course of the Amsterdam auctions. Further sales of 10,000 oz. *Brunswick* quinine (spot) are reported to-day at 1s. 3d. per oz.: and a small parcel has been done in second-hand at 1s. 2½d. per oz. The *B & S* agents have no price, *Zimmer* quotes nominally 1s. 3d., *Whiffen* 1s. 5d. for vials and 1s. 3d. per oz. for bulk. Market strong.

SPICES.—*Pepper* has shown a firm market for all varieties, chiefly on account of the statistics cabled from the East, showing much smaller shipments during the month of October. At auction fairly large supplies of black pepper were bought in, excepting one lot of Singapore, which sold at 3½d., and 31 bags of small Lampong, which realised 3½d. per lb. There were no white Singapore pepper offered at auction. Of 328 bags Siam, 25 sold at 6½d. for fair and 9½d. to 9½d. per lb. for superior washed quality. White Penang pepper has been sold up to 5½d. per lb. on the spot. At the close the market is again rather easier.

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w.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, DECEMBER 4, 1897.

[No. 36.]

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ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 10th December 1897.

S. E. Wynaad.

1st December.—Weather.—Since my last report no change in the weather. Except on the 28th, 29th and 30th November we have had heavy showers of rain. To-day it is bright and sunshiny. *Crop.*—Picking is being continued; the ryots have finished chamai harvest, and are harvesting paddy here and there. Grain is still ruling high. *Plant-disease.*—Showing very little here and there. *Labour.*—Sufficient.

Nellampatty (British).

1st December.—Weather.—There has been a fresh burst of the N. E. Monsoon and we have had 3·10" rain. It began on Friday morning and stopped yesterday, and during that time the weather was the most "monsoonish", we have had during this N.E. It seems gone now, however. *Crops.*—Rice selling 8½ to 9 measures for the rupee. Gram 12 measures. My coffee crop consists of berries, so don't blame me if I can't tell you much about it this week! Been too busy to make observations elsewhere. *Plant-diseases*—Coffee looking well everywhere, and clearings that have had leaf-disease are recovering nicely. *General Health.*—Good. *Labour.*—Plentiful. *Interesting Items.*—"Light on the dark places"! We are no longer to be left to our own sweet wills in matters ecclesiastical, as it is said a "Padre" comes up this month. Missions to the "lapsed masses" have been found rather uncomfortable businesses when tried up here on account of bad roads, transport, &c.; but now they have made a bold effort, and let's hope they'll keep it up, and some day we may hear at home, from the missionary platform, the stirring capture of the Nellampatties!

GENERAL NOTES AND ARTICLES.

A correction.

Last week, in our article on "Some Dangers attendant on Cattle Manuring," the substitution of "oats" for "vats" will explain some of the passages.

MIXED MANURING.

WE extract the following very interesting notes from the *Calcutta Planter* :—

When one hears of a mixture of manures being applied, in which some one ingredient is in excess of the other necessary ingredients, one is apt to think that it discovers an ignorance of the rudiments of manuring. For example, if a mixture of nitre and fish guano go together, both of which contains a large percentage of nitrogen, one would naturally think that an unnecessary supply of this ingredient had been provided. Or, again, if bones and phosphates in some other form be mixed together, one would conclude that there was an unnecessary predominance of this manurial ingredient, and so on. But surprising as it may appear, the practice of mixing manures in this way has been proved to be scientifically correct. In an exhaustive paper on the subject of manuring which Dr. Somerville read before the Farmer's Club, an account of which appears in the *Field* of the 14th November, 1896, in dealing with the mixtures noticed above which Dr. Somerville calls submixtures in contradistinction to mixtures which form a complete manure, he is represented as having said that "by a submixture he meant the use of more than one kind of nitrogenous, phosphatic, and potassic manure to supply the element concerned; that he explained that, so far, his experiments in this direction had been chiefly confined to nitrogen and phosphates, but his inquiries with these substances had practically never failed to show that the average yield is improved by going to more sources than one for the element wanted. The yield clearly indicated that for nitrogen it was more economical to employ $\frac{1}{2}$ cwt. nitrate of soda and $\frac{3}{8}$ cwt. sulphate of ammonia in combination than 1 cwt. of the former or $\frac{3}{4}$ cwt. of the latter separately. In the same manner superphosphates and basic slag were more effective in combination than when either was used in double quantity alone. . . . Even more complex substances than those named gave better results when used in conjunction with other materials of the same class. Dissolved bones, bone meal, and fish guano all operated to better advantage along with other phosphatic and nitrogenous articles than when alone." These manurial substances were not in all cases to be mixed before application. Dr. Somerville thus explained the results obtained by the mixing recommended. "The reason why a complex dressing produces a larger crop than a more simple application is not far to seek, where plants are fed on, let us say, one form of phosphate, the probabilities are that their phosphatic food is either too soluble or not soluble enough, so that they either get too much in the early part of the season, and are starved later, or *vice versa*. But, on the other hand, if one offers plants a mixture of phosphatic foods differing in their degree of solubility, the plants feed upon the most easily assimilable portion in the early part of the season, and as that is gradually exhausted, the other forms come into use and supply the crop with sufficient nourishment later in the year. And similarly with regard to nitrogenous and potassic food."

CEARA RUBBER IN SOUTH INDIA.

EXPERIMENTAL plantations of this variety of rubber have proved, in South India as in some other countries, a failure. It is the usual thing: the growth of trees is excellent, but the yield of rubber is insufficient to make the undertaking a profitable one. We excerpt from an article in the *Madras Times* the following details bearing on the experiment :—

While the trees grow and seed well in Malabar, and more especially so in South Malabar, and while the rubber yielded was of good quality, clean, very elastic and free from disagreeable odour and not unduly sticky, they do not yield sap in sufficient quantity.

From certain trees in North Malabar two lots of rubber, weighing each under 1½ lb., were collected by the District Forest Officer from 21 and 40 trees respectively. The revenue per tree would be something ranging from a half penny to a penny at English prices, the average cost of collecting the gum having been about Rs. 1-13-0 for each collection. In the January of 1895 one hundred ceara rubber trees, according to the report of the District Forest Officer, South Malabar, were tapped in Iravallikavu. Each tree was tapped six times, twice a day morning and evening, for three days, and 10 lb. of rubber, valued in England at 1 shilling 6 pence to one and nine pence per lb., was collected. At the end of December, 1896, 309 trees were tapped, which yielded 24 lb. of rubber. The largest tree

tapped, 3 ft. 9 in. in girth, gave 8 oz. of solid rubber, and the smallest which ringed 3½ inches, gave ½ of an oz. The average per tree was 1 oz. For taking the rubber to the home markets, or even to the sea coast, the rubber produced by the ceará trees is of no use as a commercial product, and as compared with the varieties *Para*, *Elastica* and *Heva Brasiliensis* is not in the running. The Government, however, in spite of the very discouraging results of the experiments, are still keeping it in mind, and are trying to improve the cultivation.

Soil and surroundings with rubber trees, as with all things, have a great influence on the results. Trees growing in moist alluvial soil, as is very natural—though the Forest Officer *narrates* wonders at it—bleed more freely than those growing on dry soil. A small tree of 21 inch girth, on good moist soil and standing some distance from teak, gave 4½ oz. of rubber, while a tree of 1½ inch girth on dry ground and ringed with teak seemed to run in wood and gave only ¾ oz. The best season for tapping is from December to February; tappings in March and April meet with scant success. The trees, too, bleed more freely in the early morning than later in the day, the vents keeping open for nearly twice as long. The method of tapping, as described in the report under review, are interesting. Trees were tapped after two fashions. In the first instance a few trees were tapped by making incisions in the trunks, of various shapes, and small cups, formed of the leaves, were pinned underneath these to collect the milk. The milk, however, did not flow into the cups, but trickled down the stem in dribbles which set, and were, after three days, removed in long strips, giving a few grains of rubber per tree, of good quality and free from grit. The other trees were tapped in a different manner. The large roots near the surface were laid bare, and incisions 1½ to 1 inch long and ¼ an inch apart were made on the exposed roots with a bill-hook, and the milk collected in little pits dug in the ground under the roots to receive the milk. The trees were tapped twice a day, three days, *i.e.*, between 6 to 10 A.M. in the morning and between 4 and 5 P.M. in the evening, and on the next morning the milk was found to be coagulated in hard tongues. These were removed and the tree tapped again as before. It is suggested that the value of the rubber by the Kew authorities and the English rubber experts should be published in the district, if the tree has been grown to a certain extent by planters.

LETTERS TO THE EDITOR.

INTERNAL ESTATE BOUNDARY STONES.

DEAR SIR,—When Madras Act No. IV. of 1897 (an Act to amend the law relating to survey of lands and settlement of boundary disputes) was before the Legislative Council during the last session, a clause was inserted, at my suggestion, in section 14 of the Act, by which the local Government might from time to time, by notification, exempt owners of estates from the necessity, which previously existed, of keeping internal and useless boundary stones.

I was led to press for the insertion of this clause in the amended Act, by the representation of certain planters in the district who complained of the trouble, expense, and damage to their estates arising through the enforcement of the then existing clause.

In order to take advantage of the amended clause, I would suggest that owners wishing to bring their estates within the operation at once signify the same to you in writing, and to alter the names of estates claiming the exemption above referred to have been collected, they may be forwarded to the Collector of the District by the Association with a letter asking that the necessary steps be taken to bring such estates within the operation of clause 14 of the Act.

To save time and correspondence, applicants should give the names of their estates, with particulars as to situation and area, giving also the subdivisions and their areas, and stating whether they are held under the waste land rules or otherwise.

I shall be obliged by your circulating this letter to the members of the Association, and publishing it in *Planting Opinion* for the information of planters generally in the District.
31st October 1897.

H. PERCIVAL HODGSON.

[This letter has been forwarded us for publication by Mr. Windle, n. Secy., Nilgiri P. A.—Ed.]

E. LITHOSPERMA SEED.

DEAR SIR,—May I be allowed to intimate through P. O. the many planters who have booked orders for E. Lithosperma seed that the crop this year is considerably earlier than usual, and that orders that were booked for January-February delivery will be executed next month.

There is another point I should like to mention, and that is the importance of keeping crickets out the nursery. They play great havoc, nipping the plants as soon as they show above ground, and unfortunately the plants never shoot again.

There is a very simple way of testing the soundness of the seeds: put a certain number in a flower pot, cover the seeds with sand and keep constantly moist and in the shade; at the end of a week most of the seeds will have germinated and can be planted out, and this can be done daily until they have all germinated. Any bad seed can easily be detected after a few days in the wet sand by its dull, dirty, black colour, the healthy seeds all having a reddish appearance.

ARIENKOW, SHENCOTTAH, }
24th November 1897. }

B. NELSON.

COFFEE.

No bees, no berries. A CORRESPONDENT sends us the following extract from *Good Words*, written by Professor Wilson in 1881:—

The common flowering currant is much frequented by bees as well as other species of insects and usually produces abundance of berries. The writer last summer carefully covered with muslin several of the newly-opened blossoms of this bush. This had the effect of preventing any insect gaining access to these flowers, and it was observed that they continued fresh and bright long after all their unprotected neighbours had withered, and that whilst an abundant crop of berries was produced on all the exposed branches which had been visited by bees, not a single berry appeared on any of those from which insects had been excluded by the muslin.

Lady Coffee Planters. The Hawaiian Islands can boast of several Lady Coffee Planters, the richest of whom bears the somewhat appropriate name of Wildwood. She is now 23. Two years ago she was a stenographer in a law office with no capital except a thousand dollar legacy that she was saving for burial expenses, as working spinsters sometimes do. She heard of the coffee plantation possibilities in Hawaii, and she decided to risk the funeral, and invest her capital. She induced her brother, who had an equal capital, to join her. In Hawaii they took up 260 acres of land at £1 an acre. A friend of theirs with some experience in coffee growing joined them. Within two years they have all made the venture pay. Miss Rita Wildwood expects to be earning an annual income of £2,000 at the end of four years.

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma loppings, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	„	Potash.
14.92	„	Lime.
13.68	„	Phosphoric Acid.

Seed cured under Messrs. Sutton and Sons' advice.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs.6 per pound containing about 2,000 seeds. Germination guaranteed.

Only thornless variety extant, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE,
Shencottah.

ASSIMILABLE NITROGEN AND LEAF-DISEASE.

II.

Review of the position.

In my last letter to your paper on this subject, I mentioned how complete prevention of leaf-disease, even cure, was possible under favourable conditions by adding artificially the missing Nitric Acid to the soil. Only one of the conditions to ensure such success was suggested, though others must play an important part. The one brought forward was important, in that the much higher state of oxidation naturally acquired by a soil which when the missing Nitric Acid was applied gave it complete immunity from disease which could possibly exist. So successful was that application that one might walk through acres of heavily-bearing coffee without being able to find one leaf through these acres, and throughout that year, with a trace of disease. The treatment there was completely successful.

A strong contrast to this healthy soil was given in the form of a highly organic matter one of Mysore, containing probably some four to five times the actual amount of reserve nitrogen, yet fettered in many various ways from presenting its nitrogen to vegetation in an assimilable form, especially to such a feeder as coffee happens to be.

The energy-givers.

Even if Nitric Acid (in form of Nitrate of Soda or of Potash) had been given to such a soil, it would seem impossible that any really good or permanent results could follow, at any rate not attended with the phenomenal success which was so prominently visible on the much healthier soil. It must mean waste of money, i.e., dispelling of much of the Nitric Acid. It could not give the wished for effects in placing the tree in a position to obtain its nitrogen—to form its valuable proteids (those strength-givers). Thus it could not render itself strong enough to resist the invasion of any of those thousands of *Hemileia Vastatrix* spores which may be floating in the air. But if provided with its energy-givers, the proteids, the tree does not become mere organic matter and a prey of bacteria. It has its own life, so to speak, within it intimately connected with this organic matter protecting it against the disease germs.

Feeling the immense value of these nitrogenous bodies to the tree, I had written a somewhat lengthy paper suggesting their use to vegetation, which has made this paper later in appearing than it otherwise would. I wish now to defer the paper on the proteids and go straight to the soils, to carry on the thread of what has already been begun, i.e., the many interesting ways one can prove by FULL analyses the small power certain soils have to form and retain in assimilable nitrogen.

Some soil analyses.

Yet these peculiarities of soils are felt to be only one of three (at least) important ways. Shrubs such as coffee are starved of their nitrogen. Now to show this, I am enabled to bring forward here, through the kindness of a planter, some most valuable analyses; valuable because it will be seen they go into detail such as to reveal the state of health and condition of the soils tested, i.e., in most cases their non-activity. To make them all the more convincing, however, I must bring forward Professor Voelcker's analyses of three Munjerabad soils, one set of which analyses confirm and help the others in different ways. For instance those by Mr. Robinson, though so full in other ways, leave out the important test for nitrogen as Nitric Acid. Professor Voelcker's, which would help to prove my point, leave out the test for Carbonic Acid. But I am anxious to show by several ways that the organic matter of these low oxide of iron and alumina soils is only decaying slowly and giving to the soil as the products of that decay Nitric and Carbonic Acids. Here is the important point of course, the Nitric Acid.

Then if the results of this decay of Organic, the Nitric and Carbonic Acids in the soils are not visible, ask yourself the reason why. This seems to me extremely clearly answered in Mr. Robinson's analysis. The very poor state of oxidation, plus the high water holding power causing this slowness of decay (after all these two factors are much of a oneness, though not altogether). Later on, I repeat, it can be easily shown that the Mysore soil in Mr. Robinson's analysis, so rich in organic matter and therefore in nitrogen, is the very soil

least able to give in its present condition Nitric Acid to the plant—poor as the others are also in this respect.

I here, therefore, annex below the analyses of Professor Voelcker and of Mr. Robinson. The analysis of the latter gentleman shows a state of such extremely low oxidation and such low amounts of Carbonic Acid that they more clearly demonstrate how extremely slow the decomposition or decay of organic matter is taking place within the soils analysed. They show, therefore, how meagre the resulting Nitric Acid is. Nitric Acid never appears high in a soil naturally, only the merest fraction, but it will be noticed that it is so low in the Professor's as to be untraceable by the weaker detective power of analysis over that of roots. What must it be in those done by Mr. Robinson?

Any discussion on these I leave till next time, but would at the same time ask my readers to note the very high proportion of the ferrous (the protoxide of iron) in Mr. Robinson's analyses. With this low oxide of iron so very high, it is impossible to have Nitric Acid in any reasonable proportion.

ANALYSES OF INDIAN COFFEE SOILS BY MR. H. ROBINSON. CHEMICAL ANALYSES ON AIR-DRIED SOILS.

	Pulney District.		Mysore District.	Shevaroy District.	Nilgiri District.		Lbs. per Acre per 18-inch Depth of Nilgiri Soil (Sub).
	Surface.	Sub.			Surface Soil.	Sub.	
Moisture	2.500	2.120	8.320	5.260	3.460	2.730	163,800
Organic matter and combined water...	8.223	6.792	23.061	13.980	9.387	11.100	666,000
Insoluble in H. C. L.	75.200	74.350	51.080	56.160	70.800	67.600	4,056,000
Soluble Silica	1.20	290	1.10	230	0.80	1.52	9,120
Ferric Oxide	3.328	3.521	3.680	3.600	5.803	4.721	283,260
Ferrous Oxide	1.514	1.440	5.097	3.680	1.750	2.679	169,740
Alumina	4.938	9.168	3.590	14.688	5.577	8.724	423,440
Lime	1.092	616	2.408	795	1.031	488	29,280
Phosphoric Acid	151	281	390	332	246	299	17,940
Soda	650	291	905	108	223	199	11,940
Potash	529	270	322	108	240	143	8,560
Magnesia	620	432	1,068	440	550	456	27,360
Sulphuric Acid	225	158	983	216	148	151	9,060
Nitrogen	127	136	546	224	238	255	15,300
Carbonic Acid	783	207	240	220	467	303	18,180
	100.000	100.000	100.000	100.000	100.000	100.000	...

This soil was

It absorbed of water ...
Parting with, in 24 hours...
Contained Soluble Salts ...
Contained Nitrogen as Nitric Acid was not analysed for in these soils.
Contained Ferrous as Ferrous Sulphate was not analysed for in these soils.

= 4,440

ANALYSES OF THREE MUNJERABAD SOILS BY PROFESSOR VOELCKER.

Solids dried @ 212°F.	No. 1.	No. 2.	No. 3.
* Organic matter and combined water...	7.15	13.73	13.30
Protoxide of Iron	trace.	1.54	2.54
Peroxide of Iron	5.04	11.83	12.02
Alumina	20.39	11.53	13.81
Lime	20	32	32
Magnesia	28	32	30
Potash	25	10	10
Soda	12	10	09
Phosphoric acid	13	15	10
Sulphuric acid	03	02	04
Nitric acid	...	...	...
Chlorine	01	...	...
Insoluble silicates and sand	66.40	60.34	57.38
Total	100	100	100
* Containing Nitrogen	032	20	20
Equal to Ammonia	039	24	24

Dr. Voelcker remarks that No. 1 is considered good coffee soil, and that coffee does not do so well in Nos. 2 and 3. From this he infers that the supply of nitrogen is of lesser importance in the case of coffee and that the superiority of soil No. 1 to Nos. 2 and 3 would appear to rest on the excess of potash, the lesser proportion of iron salts, and very probably also in the fact that these latter are present in the more fully oxidized state of peroxide and not in that of protoxide of iron.

Ferrous and Nitric Acid inconsistent together.

One might close any arguments by saying that the presence of Nitric Acid is inconsistent with that of Ferrous because the formation of this food is not only prevented in its presence but further, what little forms stands the great chance of being dioxidised and being converted into useless Nitrogen gas in the pores of the soil and thus made useless to vegetation. Coming on to these points later, I ask that the extremely high proportions of this low oxide form of iron are noted in relation to the higher oxide of Ferric, in other words Peroxide. Nitric Acid must exist in close relation to it. It is this proportion of one to the other that is the important point, and, as I think, can be shown depends, not only on the soil's fertility, but the duration of such fertility.

The quick way these soils "go back" in fertility is well known and this is a thing peculiar to Ferrous soils. See Storer on the subject. Yet the whole main point after all is: (1) the very slow way such soils can form this assimilable nitrogen, (2) the great risk Nitric Acid runs of being chemically lost (dioxidised) in the soil, (3) the poor way it can be held in the soil in times of heavy rainfall.

To these I trust to refer next time and go into more closely.

NITRIC ACID.

TEA.

The Madras Gold Medal!

A "gold medal" is an excellent advertisement, so the many competitors in the local markets should do their best to secure the medals offered by the Madras Agri-Horticultural Society in February. The conditions are simple:—

- * 1. — A gold medal for the best sample, and a silver medal for the second best sample of Tea so moderately priced as to be suited for general consumption.

N.B.—The samples exhibited shall be not less than 30lb. in weight, and competitors must sign and forward a declaration that they are

* Samples of Tea must reach the Garden by 31st December, 1897.

Advertisers are notified to send all advertisement matter and answers to advertisements direct to Manager, this paper, 3, Esplanade Row, Madras.

Correspondence and matter for publication to be sent to Editor, this paper, Coonoor.

the growers and preparers of the same, and that they have been grown since the last exhibition, and form part of a "break" of at least 1,250lb. The Exhibits will be sent for valuation to a Tea Broker in Calcutta, and the prize awarded by the Judges in accordance with the Broker's Report.

We fancy that the usual very small number of competitors would be materially increased if notice were given to the public of the standard to be used in valuing the teas by the brokers, *i.e.*, by the London market standard or the drinking tea standard. For these are by no means identical. An excellent drinking tea may not fetch more than 6d. in London, while a London shilling tea may be, by the drinking public, considered far inferior to the 6d. drinking tea. What are the medals given for? To improve the London or drinking standard of Madras-grown teas? If the former, they are well-nigh useless. If the latter, the brokers should be instructed accordingly.

Indian exports.

The total sailings from the 1st April to 31st October from Calcutta were 91 millions odd, an increase of nearly 1 million on last year's figures. Sailings to Great Britain are still lower than those of the preceding season, while those to Australia show a gratifying increase of nearly 1 million pounds, about 30% more than 1896. America also shows a distinct increase. The total exports from Ceylon from the 1st January to the 19th October were roughly 92½ millions against 83½ last year, and almost 70 millions in 1894.

Tea lead.

A correspondent to the Calcutta *Planter* writes that he had a letter sent him the other day intimating that tea lead can now be supplied to any length and breadth which may be wished. The idea seems to have been prevalent that only certain sizes were obtainable, *viz.*, 37" x 22" and 25" x 19", and so these sizes have always been ordered and sent out to India. Now it seems it has been found out by suppliers that these particular sizes are not capable of lining a chest of tea of any size without a good deal of patching and piecing. The suppliers write as follows:—The idea is that it takes two sheets 37" x 22" to go round the sides and two, 25" x 19", one each for the top and bottom, for each chest, but in any case this involves soldering two sheets 37" x 22" together, and they might just as well be sent as one sheet and save the join and the 1" lap, but we think that you will find that in all probability the size for the top and bottom sheets is incorrect, as it is obvious, if the sheet 25" x 19" is used for a top and bottom, two sheets 37" x 22" would not go round the sides. We have been told by some merchants that "our having called attention to this has saved the gardens a considerable sum of money, as formerly there used to be a great deal of waste in making up the tea boxes." Now what I have always wondered at was, why tea lead should not be sent out in continuous rolls of certain breadths, and that the lengths required be cut off on the gardens. I find out that in full-sized chests that hold 100lb. Pekoe, 120lb. Broken Pekoe and 85lb. Pekoe Souchong lead of the following sizes is required, one sheet 84" x 22" and 2 sheets 27" x 22". For half chests holding 50lb. Orange Pekoe, 80lb. Fannings, one sheet 62" x 20" and two sheets 18" x 18" are required. Now any one who has experience of the cutting and soldering of

the lead which we receive from Calcutta must often have pondered over the trouble and waste of labour and solder required to make the lead fit the boxes. I remember some years ago, a member of a Calcutta firm being up here and my speaking to him on this subject, and he informed me that rolls of tea lead could be got in Calcutta. I made a good many enquiries, but could get nothing except the standard size, and no one seemed to know anything whatever about any other kind of tea lead, so I had to give up in disgust. I wrote to my informant and told him the result of my enquiries, and he said he had found out he had been mistaken in what he had told me.

NEW SYSTEM OF WITHERING TEA LEAF.

We condense the following from a recent article on Mr. Edward Robinson's new witherer in the *H. & O. Mail*:—

He mentions that a complete installation has been sent out to Ceylon and will be set to work without delay, and that a large number of planters inspected his working model, and opinions highly favourable to this new departure have been expressed. He points out that an important part of the system has already been thoroughly tested in practice and has proved a remarkable success, namely—the arrangements for producing and evenly distributing large volumes of warm wind. Some forty installations of this special apparatus are, it is mentioned, at work, and there are excellent testimonials respecting it. Having thus been able to secure in large buildings the exact conditions necessary for successful tea withering, the inventor has turned his attention to this widely-felt requirement, and has designed and patented an arrangement of swinging trays which he claims is not only very simple, but which introduces a distinctly new idea into the practice of using trays as spreading surfaces for withering. The new method may be briefly described thus: Strong trays, having each an area of thirty to forty square feet, and made with a frame of round iron, covered with wire netting, and all galvanised, are attached on one side by means of staples to a strong angle-iron frame-work. They are fixed about four inches apart, and will swing about from one side to the other like the leaves of a book. To the side opposite the hinge-like attachment ropes are fastened, which ropes are connected to a continuous roller or windlass, carried overhead and supported by angle-iron uprights. The windlass is worked by a worm-wheel gearing, so that a boy can easily raise up a whole row of trays at once. On commencing to spread leaf, the whole row of trays is made to recline back upward. The first of the series is then turned over by hand and the leaf spread, the same with the rest of the trays in succession. The row of trays being thus spread, a few turns of the windlass raises them all up at once to any desired elevation. It is then found that the leaf rests securely on the trays when raised to an angle of 45 deg., or even more. To about this elevation the trays are raised and left until the leaf is withered. Obviously trays standing in this position, with clear spaces of about four inches between each tray, admit of a free up-draught of wind to carry away moisture from *both sides* of the leaf. The air pipes are so arranged as to disperse a constant gentle current of fresh dry air *under each row of trays uniformly*; thus each tray gets its own supply of fresh drying wind, such wind having only to pass once between the trays, after which it is driven out through the upper ventilators by the constant incoming wind from below. Thus in bad, wet weather it is only necessary, according to the inventor, to close all doors and windows, and set heater and fan to work, and first-rate withering can be done irrespective of the weather outside. Many planters of large experience, the inventor mentions, have told him that this system of withering is well calculated to save a large portion of the losses now unavoidable during heavy flushes of leaf in the rainy seasons. Should this expectation be realised, it is scarcely possible to over-estimate the importance of such an improvement.

As to the great saving of labour, that, the inventor contends, is obvious on the face of it, for the spreading of the leaf upon a flat open surface some two feet from the floor is much easier than the stooping down and climbing up, and reaching between the tats necessitated

by the present mode of working, whilst for gathering in the withered leaf a few turns at the winding gear raises a row of some fifty or sixty trays to an upright position, and the leaf at once shakes down upon the sheet spread out under the series of trays. The sheet is then wound in upon a simple roller having a handle and light gear-wheels. The leaf can be dropped through an opening in the floor or picked up as desired. There is nothing in the process that can break or bruise the leaf, which is another very important consideration, having regard to all the vexed questions about small siftings.

At first sight it does not strike us that there would be the saving of factory space which is claimed for this system. It is, however, a matter of simple computation, but the inventor contends that upon a careful comparison of the spreading space obtained by the new arrangement with the actual spreading space available in numbers of factories of the ordinary kind, more than *twice the area of spreading space* is obtained under the new method in the same area of building.

It is further claimed that in the wear and tear of plant a saving of fully 50 per cent. will be realised. The wire trays are never moved from their places, and the only handling required is just to swing them over for spreading the leaf. Strong trays so used are calculated to last for some years.

The inventor claims that the most important results are expected to arise from the control the system gives over the necessary conditions of withering in bad weather. When the weather is good and quite favourable for natural withering, the windows of the house are opened and no heater or fan used. The arrangement of the trays he regards quite as suitable for natural atmospheric withering as the ordinary trays now in use, plus the saving of labour, space, &c. If the weather is hot, dead, and still, the fan alone can be worked, imparting a nice gentle motion and life to the air and expelling the vapour. When the outside air is saturated with moisture and will not wither leaf, a little steam can be let into the heater, raising the temperature a few degrees; vapour will then be freely carried away, and good withering done. By increasing the inlet of steam, the temperature of the house can be raised so as to wither well on the coldest and wettest of days. Thus it is claimed that without in the least interfering with any existing advantages, natural or otherwise, this new system affords the planter the means of effectively withering his leaf, whatever the weather may be. The same thing is being done, says Mr. Robinson, now in numerous factories larger than any withering house on this system would need to be, the conditions obtained being identically the same as the well-known conditions required for withering tea leaf.

INDIAN TEA ASSOCIATION.

FROM the proceedings of the General Committee Meeting held in Calcutta on the 8th ultimo, we extract the following:—

Bulking in London. Letter of 1st October, from the Secretary, Indian Tea Association, London, stating that the Committee had given their attention to the contents of the letter signed by "An Anxious Planter" in the *Home and Colonial Mail* of 30th July, forcibly urging that tea which is turned out for the purpose of bulking should be repacked by machinery, instead of being trodden into the packages by dock labourers. The London Committee noted that the General Committee were of opinion that a different system of weighing should obtain in London, as mentioned in their letter of 8th September, and their Secretary pointed out that after several years of strenuous efforts the Committee had obtained

the concession from the Custom House authorities to have tea weighed nett, and that it was now within the power of anybody who was able to get his tea properly bulked in India so as to pass the scrutiny of Brokers, and to pack it in chests of even weight, to avoid having it turned out on that side, but that unless both the tea and the tares were fairly even in a break there was no course open but to have the contents turned out on the floor of the warehouse. It was regretted, however, that in too many cases Growers and Importers appeared to have given up the attempt to meet the above-named conditions. He would, however, consult the trade in the matter. There was no doubt that the introduction of machinery for repacking tea would be a great improvement.

The London Secretary stated that the Committee had authorised him to write to the Secretary of the Tea Brokers' Association to express their approval officially of the alteration in clause 4 of the Public Sale Conditions as recommended by the Special Committee. The alteration when made would require all teas to be sold as bulked either in the country of production or London.

The letter was ordered to be recorded.

Letter of 8th October, from the Secretary, Indian Tea Association, London, with further reference to the system of repacking in London warehouses, and to the views expressed by "An Anxious Planter," with extracts from the sixth, ninth and tenth Annual Reports of the Association, in which reference was made to the subject of net weighing, from which it would be seen that the system had already been in force for about three years, and was reluctantly suspended owing to the opposition of the trade to have teas weighed in that manner.

The London Secretary stated that from enquiries made he found that it was not now an uncommon practice to leave the process of bulking the tea to be done in London, notably by several well-known concerns, presumably with the object of avoiding claims, although in the opinion of the trade it had been avowed that a decided preference is given to teas bulked in the factory. He considered that it was much to be desired that a continued effort should be made to lay down tea in London in such a condition that it might be kept untouched without risk of deterioration owing to the humidity of the climate.

In reply to a letter of enquiry on the subject of the use of machinery in repacking tea, the Managing Director of Butler's Wharf wrote to Mr. Tye as follows:—

"We do not use any machines for repacking teas. It has been an utter failure at the London Tea Warehouse. We fail to see how an average sample of tea can be drawn from any machine-packed chest. All bulked teas are weighed gross, and nett, both under the supervision of Her Majesty's Customs; teas not bulked are weighed gross, and average tare fixed by Her Majesty's Customs."

In this connection the Secretary was instructed in writing to London to embody the remarks made by Mr. Traill, when the letter was in circulation, which were to the effect that the Association should press for nett weightment of all teas turned out for bulking in London. Nett weightment meant the actual weightment of the contents of each chest, and not as at present, weighing the chest gross, deducting fractions of a pound, then turning the tea out and taring the chest, taking any fraction of a pound as a full pound. By this system it is quite possible for the Customs weight to show 1 lb. 15 oz. less than is in the chest. There is no doubt that many claims for loss in weight are largely due to this antiquated and unfair method of weightment. It was presumed that the wholesale dealers could not reasonably object to a system that would ensure their getting the weights of tea they paid for.

The American Fund

Letters of 24th September, and 1st, 8th and 15th October, with their respective enclosures from the Secretary, Indian Tea Association.

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association, London, in connection with the American Market Fund, which had previously been circulated to the Committee, now came for consideration.

In his letter of 11th September, Mr. Blechynden stated that the decision of the Board of Appraisers on the "Tea dust" question, as a most important one, and if matters were allowed to take their course, there was little doubt that practically all fine teas would be kept out of that market. He proposed, however, to continue pushing his side of the question to the utmost of his ability, and hoped his efforts would be successful.

In his letter of 21st September, Mr. Blechynden stated that he had called a meeting of a few houses of importance in New York to draw up a petition to the Treasury Department, which he would take to Washington with as little delay as possible.

The Committee were glad to note that Mr. Blechynden was doing all in his power to remove the restrictions with regard to "dusty teas."

Letter of 15th October, from the Secretary, Indian Tea Association, London, in connection with the American Market Fund, came for consideration, and the Committee noted that he had received samples of Oolong teas manufactured by the Kausanie Tea Company, and that he had recommended samples to be forwarded to Mr. Blechynden for inspection, and to get a report on their value. He also stated that he had had a call from Messrs. T. Barlow and Brothers the other day, who wished him to point out that the Derby Tea Company, which subscribed to the American Market Fund, does not appear in the published list of subscribers for 1896.

The Committee expressed their regret that it had been omitted from the list through an oversight.

DR. LAMONT'S STRONG FINGERS.

"I was afraid you were going to slip through my fingers," said good old Dr. Lamont.

The writer was a boy of about seventeen, then. While a student at school, more than 300 miles from home, I was taken down with pneumonia. I had a tough time, and for two or three weeks my life was despaired of. But youth and good care won the fight, and one bright morning I was ready to go home with my dear father who had come for me. I was weak still, but well and happy clear up to the brim. Oh, what a ride! Oh, what sweet air! Oh, what a glorious world I had got back into! and what a reception from mother and sisters at the familiar house. Oh, life! Oh, health! Oh, *dulce, dulce domum!*

Such an illness, if one survives it, only makes the sense of existence and its blessings more keen and delightful. It is good rather than bad. Lucky boy, not to have slipped through the doctor's fingers.

But when a man with most of his days behind him has to write a line like this "*All my life I have suffered more or less from disease*"—why that is another and sadder story. It is the odds between an occasional thunderstorm and a sky always covered with clouds.

We quote what he says, reminding the reader that in this matter Mr. William Hodkinson voices the experience of millions. He says: "I always had a bad taste in the mouth, no proper relish for food, and after eating had pain and fulness at the chest."

These sensations are symptoms of acute indigestion. In the stomach there is marked loss of power. The food is neither rolled over at it should be so that the whole of it in turn may be presented to the digestive fluid, nor is it duly moved on towards the outlet into the bowels. As a result it ferments and gives off irritating acids and gases; hence the patient complains of pain, weight, distension, acidity, and flatulence in that region. Thence the poisons proceed to every other part of the body, and headache, vertigo, gout, rheumatism, depressed spirits, and a score more of evils follow; among them,

possibly, nervous prostration, progressive anæmia, locomotor ataxis, and more or less complete paralysis.

"Frequently," continues Mr. Hodkinson, "I was sick, and as time went on I became very weak and feeble. I consulted one doctor after another, and took various medicines, but obtained no real or lasting relief from any of them. This describes my general condition until the fortunate day when I read about Mother Seigel's Curative Syrup. I was impressed by the statements others had made concerning it, and proceed to try it. After taking one bottle I found relief, and was soon entirely free from my old complaint. Since that time (now eight years ago) I have enjoyed good health. Knowing personally of its virtues, I have recommended this remedy to hundreds, and have never heard of its having failed to give relief. But for Mother Seigel's Syrup I should have been in my grave years ago. (Signed) William Hodkinson. Hollington, near Uttoxeter, Staffordshire, August 11th, 1893."

Mr. Hodkinson is well known and highly respected. He is a local preacher in the Methodist church, and by employment a quarry master. Had he gone into the grave, as he feared he should, he would have been missed and lamented by the community in which he has long been useful, and will live to be useful, we hope, for years to come.

Now let us repeat our leading thought. Short illnesses, even though sharp and dangerous, may result in good rather than harm. But a disease that drags its victim through decades of lingering distress—what shall we say of it? The trouble and suffering it inflicts is beyond estimate, and its name is indigestion and dyspepsia.

And the name of the medicine that cures it Mr. Hodkinson has done you the favour to mention with clearness and emphasis.

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MARKET SUPPLEMENT.

SATURDAY, DECEMBER 4, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (November 12, 1897)
s:—No Public Sales were held on Tuesday on account of the Lord
yor's Show, whilst yesterday the fog was the cause of another blank
. The small supplies brought forward met a slightly better demand
the market is still very dull.

No East India was offered.

A fair quantity of Columbian was catalogued and good home trade
alities realised steady prices, but mixed common sorts were all in buyer's
our.

The 'Terme' market has fluctuated considerably during the week in
nsequence of conflicting crop reports, but at the close quotations show
y little change since our last.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for
e Week ending November 10th, 1897, says:—Bank rate 3%. Bombay
change closes at 1s 3½d. Brazil Exchange 7½d. Rupee paper 3¼% 63½.
ver 26½d per oz.

The spot market continues very unsettled and the sales unimportant.
the close there is a slightly better demand, and there has been more
d at auction than on any other day this week. Prices show an irregu-
decline of 3s to 5s per cwt., the ordinary qualities being very difficult
sale. Brazil markets are flat and lower.

According to Messrs. Duuring and Zoon the European stocks on
t instant showed an increase of 15,380 tons, and the visible supply of
950 tons, the figures being 150,650 tons and 361 220 tons respectively,
ainst 135,300 tons and 354,270 tons on the 1st October.

Futures have given way another 1s, and the estimates issued this week
6½ million bags Santos for next crop have had a depressing effect.
osing prices are—Good average Santos in Havre, March delivery,
s. 37.50, in Hamburg pf. 30½, and No. 7 low ordinary Rio in New York \$5.65.

To-day's London official quotations are:—

	Dec.	March	May	July	Sept.
SANTOS	29/6	30/-	30/3	30/6	30/9

We quote:—

Ceylon, mid. to good mid.	98/ @ 102/	Costa Rica, mid. to fine...	80/ @ 108/
Do. small to low mid.	77/ „ 97/	Do. ord. to low middling.	59/ „ 79/
East India, mid. to good		Jamaica, good to fine ord.	50/ „ 63/
mid ..	88/ „ 101/	Do. greenish to fine	
Do. small to low mid.	70/ „ 86/	colory...	73/ „ 125/
Guatemala, mid. to fine...	77/ „ 103/	African	... 29/ „ 31/
Do. good ord. to low		Columbian, ordinary	... 40/ „ 47/
mid ..	60/ „ 76/	Do. good ord. to	
Salvador, good ord. foxy		low mid...	40/ „ 76/
greenish...	50/ „ 52/	Do. mid. to fine ..	77/ „ 103/

Receipts in Brazil to 9th Nov. compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
Rio	2,073,000	1,598,000	1,138,000
SANTOS	3,569,000	2,683,000	1,783,000
	5,642,000	4,281,000	2,921,000

Auctions:—

63 casks and tres. 48 brls. and bags	Plantation		
Ceylon, part sold	... @ 84/	@ 106/	
310 bags East India.	{ 15 bags Mysore bought in.		
	{ 295 bags Neilgherry bought in.		
3,513 bags Columbian, small part sold	... „ 30/6	„ 97/	*
545 bags Guatemala, small part sold	... „ 95/6	„	—
29 barrels Jamaica, part new crop, part sold	... „ 52/6	„	—
117 bags Nyassaland bought in.			
100 bags Peruvian small part sold	... „ 40/	„ 54/6	
110 bags Liberian, Johore, bought in.			
43 bags Liberian, Ceylon, bought in.			
12 bags Liberian, Penang, bought in.			
6 bags Liberian, Perak, bought in.			
37 bags Guayaquil, bought in.			
71 bags Vera Paz, bought in.			
250 bags Washed Santos, bought in.			

On Quay Terms:—

196 bags Santos, bought in.			
Landed last week	... 691 tons.	Deliveries	... 560 tons. Stock ... 10,513 tons.
Do. last year	... 653 „	„	... 550 „ „ „ 8,140 „

Christmas Cards.

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A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOOR, SATURDAY, DECEMBER 11, 1897.

[No. 37.]

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ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, “Planting Opinion,” Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 17th December 1897.

S. E. Wynaad.

DEVALA, 8th December.—*Weather.*—Since my last report, at nights it is very frosty and cold until 8 A.M., and during the day the sun shines brightly. *Crop.*—Stripping is nearly finished. *Grain.*—Rice 8, cholum 18, ragi 16, and salt 8 seers per rupee. *Plant-disease.*—The leaf-disease has disappeared. *Health*—Good. *Labour*—Sufficient.

Nellampatty (British).

8th December.—*Weather.*—No more rain since last report, and weather has been all that could be desired for pleasantness. Mornings are very sharp, and at night, as a rule, there is a high wind which is bitterly cold. *Crops.*—Coffee coming in, but not quite in full swing. Grains as last reported. *General Health*—Good. *Labour*—Plentiful. *Interesting Items.*—The place is getting quite civilised! We have a photographer up just now, and a group was taken of the planters on Sunday, (but alas, the *esprit de corps* could muster only ten out of a total of nineteen!) and this Sunday we are to have a “padre” and two services.

Nilgiris.

COONOOR, 8th December.—Since my last report we have had a few heavy but very local showers, of great use in ripening up backward crop. The N. E. current as a whole has proved up till now very nearly a complete failure. Very few planters expect anything more till March next year. Natives on the other hand are confident of a moderately heavy fall before Xmas. Light clouding up points to slight showers only. The air is very cold and bracing. Our largest local tea-garden, Glendale (now of the N. P. Company), is extending rather largely. A notable exception, this. From all over the district the same tale is told of the wide-spread selling off of estate cattle, due to the loss of faith in the efficacy of cattle manure. Labour plentiful. Health good. Even betting that the twentieth century will give our railway pounds and a beating. The gaudy station buildings are all ready and waiting. I can't say I agree with Friend Mudgere that the paper ought to relapse to once a fortnight.

GENERAL NOTES AND ARTICLES.

The "patriotism" of consumers. As regards coffee and tea, the moral derived from the cane-sugar question is decidedly encouraging.

Consumers, in ninety-nine cases out of a hundred, do not care a rap about the "nationality" of the article they purchase. They buy it for the value offered for the money. This has been very conclusively proved in the lengthy discussions about the ruined cane-sugar industry of the West Indies. Being more expensive than beet-sugar, which is made on the Continent, it is little used, despite the fact that cane-sugar is produced in British colonies and that a vast amount of British capital is invested in the industry, both in the colonies themselves and in refining works at home. So that the fact of British-grown coffee and tea being held in such high favour at home speaks exceedingly well for their intrinsic value, and encourages a hope bordering on conviction that in time the wide world will come round to the same impressions.

Exchange and the Export Duty.

A reader suggests that it is a risky proposal to ask Government to impose up to a 20% export duty on produce to compensate for the wished for opening of the Mints. It would be easy enough for Government to impose the duty, but it will be very difficult to get them to remove it, *vide* Income Tax.

We have no desire to urge the public to take hasty ill-considered action in the matter, more especially in view of the widely-spread belief that a very heavy fall in Exchange must follow the inevitable sale of Council bills to meet home charges. Yet there is no harm done in inviting preliminary expressions of opinion from all the producing classes of the country, if only to show Government that the question of Exchange possesses two very different sides.

We note by the way that the Singapore Chamber of Commerce are doing their best to convert the silver currency of the Straits Settlements to the gold standard. It would be interesting to learn how far, if at all, the wishes of the producers of the colony have been considered. For we do not think that we are altogether one-sided in our ideas, when we express the conviction that the interests of the producers, and therefore consumers, to be of paramount importance in a question of this nature.

Lady-birds for South India.

A writer signing himself "All Bosh" delivers himself of certain views concerning this question, which it is as well not to pass unnoticed. For cursory study of the subject has doubtless influenced many besides our correspondent to form similar and erroneous opinions. He evidently, and strongly, holds the idea that, because certain species of lady-birds indigenous to South India have natural enemies that keep their number woefully in check, other and different species of lady-birds introduced from far-distant countries must necessarily be attacked in India by the same enemies that have proved so fatal to their Indian brethren. The fallacy involved is, superficially, a specious one. Yet very easy to expose. For it has been proved that, by taking care not to import its natural indigenous enemies, a given species of insect can, under suitable conditions, increase in foreign countries (free from their original enemies) to an extent absolutely impossible in their native

habitat. Not with insects alone has this been proved, but in many instances with animal and vegetable life. To mention a few cases where certain forms of animal and plant life have multiplied exceedingly in foreign lands, take the rabbit in Australia, the mongoose in Jamaica, the sparrow in America, the thistle in New Zealand. Lastly, and perhaps most to the point, are those instances where the introduction of certain species of lady-birds from Australia proved the salvation of orange growers in the United States and coffee-planters in Hawaii. We have published "All Bosh's" communication solely as a peg whereon to hang a refutation of views common to all who have bestowed but the most cursory of attention on an exceedingly interesting subject. We hope the extra funds required will be raised without difficulty, and that the much-discussed experiment will soon be a *fait accompli*.

Some remedies for plant diseases.

The following are some reliable formulæ for the treatment of fungi and insectpests. They are published in Vol. IV., No. I., Indian Museum Notes, 1896, and are taken from the Report of the Agricultural Experiment Stations of the University of California:—

For *Fungi* in general use Bordeaux mixture, made as follows:—For every 10 gallons take 1 pound of lime and 1 pound of bluestone. Dissolve these separately in hot water and mix when cool, adding the rest of the water. Spray on the plants. Or spray with ammoniacal copper carbonate solution made as follows:—Dissolve 1 ounce of copper carbonate in 6 ounces of ammonia and add 10 gallons of water.

For *Fungi* and *Scale Insects* use lime, salt and sulphur mixture as a *winter* wash composed of lime, 8 pounds, salt 3 pounds, and sulphur 4 pounds for each 12 gallons of water. Mix one-fourth of the water, one-fourth of the lime and a fourth of the sulphur and boil for one and a half hours; put the salt with the rest of the lime and slake with hot water; add to the above and boil half an hour longer; add the remainder and boil. Use as a spray.

For *Scale Insects* use resin soap as follows:—For 100 gallons for *summer* use take resin 18 pounds, caustic soda (98 per cent.) 3½ pounds, and fish oil 2½ pints; for *winter* use, resin 30 pounds, caustic soda 6½ pounds, and fish oil 4 pints. The material is put in a kettle and covered with four or five inches of water. The lid is put on and the mixture boiled two hours or more, and then the rest of the water is added, a little at a time. Spray on plants. Or use the gas treatment: cover the plant with an oiled tent, and for each 100 cubic feet contents, place in a bowl beneath the tent ½ ounce of water, ½ ounce sulphuric acid and ½ ounce potassium cyanide. Be careful not to inhale the poisonous gas, nor allow it to escape from the tent for half an hour. The leaves may be injured if used during the middle of the day.

As far as we are aware, the trials hitherto made by planters with various insecticides and fungicides have been very disappointing. The cause, we are persuaded, can be traced in most instances to the extremely amateurish manner in which they have been employed. As farmers at home have found out by sore experience, the science of applying these remedies has to be thoroughly mastered before success can be attained. We are not, in this instance at least, posing as carping critics, for personally we have no great belief in such "cures." Most plant diseases are but symptoms of

graver disorder existing in the soil itself, which latter must be restored to its right condition before the plant-life existing thereon can be rendered perfectly healthy. However, we are not so utterly convinced of our infallibility as to refuse to publish both sides of a question. We trust, therefore, that previous failures in applying insecticides will not deter our readers from repeating their trials with greater care than ever before. If perfect cures cannot be achieved, palliatives are welcome and often valuable enough.

THE CACAO CANKER.

SOME explanation is needed as to the publication of such a long paper on a product that is not practically known in South India. Yet though the plant is foreign to our planting districts, the information given by the highest English and Ceylon authorities on the treatment and cure of fungoid diseases is such that we are sure their remarks will prove of great value and interest.

Memorandum from the Assistant Director, Royal Gardens, Kew, to the Director.

The probability is that the canker in cacao trees in Ceylon is caused by a fungus, the nature of which is at present imperfectly known.

2. It is understood that since the attack of the *Helopeltis Antonii* some change has taken place in the method of cultivating cacao in Ceylon. More shade is used than formerly, and the trees are covered in to such an extent that the ground underneath is constantly kept moist and covered with a heavy layer of damp dead leaves. There is no definite information in regard to the amount of drainage provided. This is a vital point. In all damp situations and those liable at any time to the lodgment of water during heavy rains there should be drains cut two feet or more deep between every row of trees. In fact, the bottom of the drain should be below the level of the feeding roots of the tree.

3. In Trinidad and Grenada draining cacao has lately received considerable attention. Where the soil is "sour" through accumulated moisture the trees have died over considerable areas. The only cure for this is deep draining, turning over of the soil, and the application of a small quantity of lime or other suitable ingredient.

4. Everywhere young cacao appears to require some shade, but the extent to which mature trees require shade depends very much on the locality. In Trinidad the trees are usually shaded all over the island. In Grenada, on the other hand, the trees have little or no overhanging shade, but are usually protected by shelter belts planted or allowed to grow on the ridge.

5. The Ceylon cacao planters would do well (1) to examine the drainage of their estates very carefully; (2) to break up the soil where the trees have died and treat it with lime to kill the mycelium* in it; (3) to isolate the healthy trees from the unhealthy by deep trenches, and give only the amount of shade absolutely necessary.—D. MORRIS.

Report by Mr. G. Masee, Principal Assistant (Cryptogams) in the Herbarium, Royal Gardens, Kew.

The material sent for examination is insufficient for the determination of the fungus, but the exact agreement in structure, &c., of the mycelium* present in the different pieces of bark suggest a fungus as the cause of the disease, and furthermore, that the fungus belongs to the group causing root disease. If the roots of a diseased tree are removed and portions kept moist under a bell-jar, the characteristic snow white nodulose mycelium would in all probability cover the roots in a few days.

The sporophores† of such fungi are only produced on dead and thoroughly decayed host plants.

* The body of a fungus, made up of fine colourless threads, as may be readily seen on examination of a piece of mildew or mould with a good lens.
† The spore-bearing organs of the fungus: the spores are the detached portions which reproduce the fungus; placed under suitable conditions a spore germinates and gives rise to a new mycelium.

The two conditions favouring the spread of root disease are: (1) accumulation of humus,‡ &c., on the ground, which retains moisture and favours the spread of the mycelium from tree to tree; (2) overhead shade.

Diseased trees should be isolated by narrow trenches, 8 to 10 inches deep. These retard the spread of the mycelium. The removal of the roots of dead trees and sterilization§ of the soil (by fire, &c.,) is most important.

Ascertain if the disease attacks native trees, may be in a modified form.—G. MASSEE.

It will be seen from the above that the home authorities regard the fungus as one of the class of root-disease fungi. Without the reproductive organs, the exact identification of a fungus is all but impossible, and until quite lately no sign of such organs has been discovered on any of the diseased cacao.

It is obvious that if the canker on the stem be merely an indication of diseased roots, the treatment recommended in the preceding Circular will have to be modified: mere removal of diseased parts of the stem will be evidently only a temporary measure.

Most observations made in Ceylon seem to contradict the supposition of its being a root disease, and the publication of this Circular has therefore been delayed for further investigation of the subject. It so happens that the group of fungi causing many of the bark cankers of trees is very closely allied to the group causing root diseases.

These bark canker fungi as a rule can only enter the stem by way of wounded surfaces on the bark, but a very slight wound is often sufficient. The frequent connection of the cacao canker with wounded places has been pointed out in the preceding Circular.

Reproductive organs which appear to belong to the fungus causing the cacao canker have recently been discovered on the bark of the stem, and indicate that the fungus does belong to one of the two groups just mentioned. As no sign of these organs can be found on the roots, and the mycelium mentioned in Mr. Masee's report has not been seen on roots treated in the way there described, it seems more probable that the canker is only a bark and not a root disease. As however the final decision of this question requires experiments in the infection of healthy trees, &c., which are now being carried on at Peradeniya, and also further reference to the authorities at home, it has been decided to publish this Circular without further delay.

The presence of the disease, as stated in the preceding Circular, is largely connected with insufficient drainage, and Dr. Morris's recommendations on this subject deserve careful attention. In many cacao plantations in Ceylon the soil has become sour through insufficient drainage, and the application of lime in some of these cases has been most beneficial.

Besides its action in removing the sourness of the soil, the application of lime helps to kill the fungi that may be present, and is therefore much to be recommended.

Dr. Morris's remarks on shading should also be noted. Mature cacao can do with very little shade from the sun, but requires protection from wind. In the Botanic Garden at Anuradhapura the *Forastero* cacao does excellently with practically no overhead shade at all, hot and dry though the climate is. The shade in most Ceylon plantations was provided to avoid the attacks of *Helopeltis*, and now that the trees have grown very large, it is probably denser than is necessary for that purpose. The reduction, if made, should be very gradual, otherwise the sudden increase of the crop will tend to weaken the trees. This reduction would act upon the fungus causing the canker in two ways: by drying the soil and thus helping to prevent its getting sour and so weakening the trees, and by the direct action of the sunlight which checks the growth of fungi and is often fatal to fungus spores upon which it acts. Care should be taken to see that cacao is well sheltered from wind: not merely is wind harmful to the plant itself, but it also carries the spores of disease from one plant to another.

The period at which further spread of the disease usually takes place is now approaching, viz., the wet weather of the north-east monsoon, and especial care should be taken to destroy as far as possible all diseased trees, and parts of trees, to prevent the diseases

‡ Decaying organic matter, whether of animal or vegetable origin.

§ The killing of all living matter: spores, mycelium, &c.

extending. The reproductive organs both of root and bark diseases are produced only on dead and decaying parts of diseased trees, and if these reproductive organs can be destroyed, or prevented from forming, as the case may be, the disease will thus be prevented from spreading to fresh trees.

To this end it is essential that the destruction be *by fire*, which alone is certain to kill the fungi. Also, the destruction should be on the spot where the diseased tree grew. If infected trees or parts of trees are carried about the estate, they will spread the disease as they go by scattering the fungus spores. For the same reason coolies should be prevented from going amongst healthy trees immediately after working amongst diseased ones. They should wash themselves before doing so. It would be advisable to employ a separate gang of coolies in working with diseased trees.

All diseased trees should be cut down to the ground, or better rooted up, and burnt upon the spot, and at the same time all the dead leaves and other rubbish lying round about them should be burnt. The surface soil should be turned over and treated with lime and the ground left fallow for some time. If planted again in cacao, *Forastero* varieties should be employed (see remarks on pages 10 and 11 of the preceding Circular).

On estates where the disease is widespread it would be well to burn all the dead leaves and lime the soil, as there will probably be fungus spores lying on the ground ready for germination in all parts of the estate.

In dealing with diseases caused by parasitic fungi, the aim is prevention rather than cure. Once a tree is fairly attacked cure is usually impossible, and it is best to kill and destroy it.

In the neighbourhood of diseased trees not merely the soil, but also the surrounding healthy trees (including of course the shade trees) will be more or less covered with spores of the disease. Those on the soil may be killed by the lime treatment above described, but considerable danger remains from those on the trees, which under favourable conditions will germinate there and produce further attacks of the disease. These spores may be killed by the application of various fungicides. The best general fungicide is Bordeaux mixture. In Europe this can be applied to leaves as well as stems, but as it is said to cause damage to the former in wet seasons, it would be well in Ceylon to apply it only to the stem. This, however, is of less moment, as the disease does not appear to attack leaves or young shoots, and if all the leaves that fall from the plants are raked up and burnt, the danger from the spores that may be resting on them will be lessened. The composition of Bordeaux mixture is:—

Copper sulphate (blue vitriol)	...	...	6lb.
Quicklime	...	...	4lb.
Water	...	...	45 gallons.

The vitriol should be dissolved in a little water and boiled; to it should be added, while hot, the lime which has been slaked in a small quantity of water and stirred into a paste. The two should be thoroughly mixed and the mixture diluted to 45 gallons. It should be tested by holding a clean steel knife in it for two or three minutes. If a reddish stain of copper is formed on the knife there is not enough lime present, and more must be stirred in until the mixture is neutral and no longer produces any stain. Before use, and while in use, it must be kept thoroughly stirred, as the important part of it is the sediment rather than the fluid. The mixture may be applied with a brush or a spraying apparatus. The latter, if used, must be thoroughly cleaned with hot water immediately afterwards, or the tubes and taps will be clogged.

Another useful fungicide is the lime and sulphur wash, but it must not be applied to the leaves. Its composition is:—

Unslaked lime	...	25 to 40lb.	Sulphur	...	20lb.
Salt	...	15lb.	Water	...	60 gallons.

To mix, take ten pounds of lime, twenty of sulphur, and twenty gallons of water; boil till the sulphur is thoroughly dissolved; take the remainder of the lime and fifteen pounds of salt slake, mix with the first lot, and add enough water to make up to sixty gallons. Strain and use when milk-warm.

Either of these mixtures will kill the spores on the bark, but if the disease is already established on the tree, it is useless to apply them, and the tree should be killed.

Of course the stems of the shade trees should be treated with the mixture as well as those of the cacao itself.

Heavy rains will soon wash off most of the fungicide, and a new coating should be given every month or so.

If care is taken to destroy all dying and dead stems, leaves, &c., on which the fungus might develop its reproductive organs, and if

fungicides are applied regularly for at least six months, there would seem to be a fair chance of eradicating the disease to a large extent. To completely exterminate it may be regarded as all but impossible. All that can be done in cases like this is at best to reduce the prevalence of disease to a large extent by killing and burning diseased trees, applying the preventive measures to the survivors, disinfecting the soil as far as possible, and taking more care in cultivation to keep the trees in good health, and thus render them less liable to disease.

The chief causes of ill-health among cacao trees have already been mentioned in the preceding Circular, and attention may again be drawn to the recommendations there made, especially those relating to the treatment of wounds and the planting of *Forastero* varieties.

There is a good deal to be said in favour of the method employed by some planters of allowing the suckers to grow. Unskilful removal of them affords openings for disease to attack the trees. Probably on estates where there is much disease it would be better to leave them on the trees.

JOHN C. WILLIS,
Director, Royal Botanic Gardens.

LETTERS TO THE EDITOR.

GYPSUM.

SIR,—Can you or any of your readers tell me where I can get gypsum, and the price of it?

How much should be put to an acre?

“D.”

[Arbuthnot & Co.'s Kallai Works, Calicut.—Ed.]

LADY-BIRDS.

II.

SIR,—I see it is proposed by some Planters' Associations to raise funds to supplement the allotment of Rs 2,000 from the Reserve Fund of the U. P. A. towards expenses of sending a qualified person to Australia to bring over lady-birds. Have you ever thought of the enemies the lady-birds have in this country? And do you not think it is waste of money to try and introduce them.

The few varieties of lady-birds we have never increase in any proportion to do good. The much-talked of good that the lady-bird will do is

“ALL BOSH.”

[Noticed elsewhere.—Ed.]

WORMS IN COFFEE ROOTS.

DEAR SIR,—I have just seen “Young Planter's” letter in your issue of 20th about worms in coffee roots. It promises to be very interesting, so it would be well if “Young Planter” would send specimens with roots to the Indian Museum, Calcutta; or if you can get them for me, I shall be glad to forward them all.

Did your correspondent apply any manure to his young plants? There is a variety of wire worm (*Elatér*) that is attracted by manure common in some districts. A little digging or breaking up of the soil around the plants brings the wire worm to the surface, and it soon becomes a meal for one of our many birds. Sawdust sprinkled with kerosine oil and thrown broadcast around the plant may do good.

MUDIGERE,
KADUR DISTRICT.

“D.”

COFFEE.

Leaf disease and shade.

In the extract on the Cacao Canker, published elsewhere, will be noted some interesting remarks of Mr. John Willis, Director of the Ceylon Royal Botanic Gardens, on the effect of direct sunlight on fungus spores. The direct action of the sun, he

states, checks the growth of fungi and is often fatal to fungus spores on which it acts. The evils of overshadowing, and consequent sourness of the soil, are noted in the weakened state of the tree induced thereby and the multiplication of fungoid growths in congenial surroundings. The remedial treatment advocated is thorough drainage of the soil (narrow deep trenches between every row), thinning of the shade trees and liming of the soil. The further advice tendered of stamping out the cacao disease by fire is strikingly like what has been frequently advocated in our own columns relative to leaf-disease in coffee.

Lime and nitrates.

A Mysore correspondent wrote us last week for information from "Nitric Acid" regarding the proper time of application of nitrates and lime. The following is his reply:—

"I should think *now* would be a good time to apply lime, and so take advantage of the X'mas rains, if any. Good wood ashes seem to be as good as anything, *i.e.*, they contain some 80 to 90% carbonate of lime and have a more effectual oxidising effect than ordinary slaked lime. At least the ashes that I sent home had. I don't think two pounds spread over the roots too much. That is what I have just done.

"*Nitrates.*—The time I saw such wonderful effects was when I saw it applied in April or May, but then the rainfall of my district is not extra much in the S. W. Monsoon. More trials are necessary to determine the best time of application, but about April suggests itself to me. It gives the tree a chance of charging itself highly with nitrogenous sap, as the showers do not then wash it below the roots. But the poonacs have possibly a safer way of supplying nitrogen. I am sorry not to be able to give any fuller information, but hope the above may be useful. The nitrates above alluded to were *very evenly* spread, which must mean half the battle."

Danger of excessive shade.

The investigations that have been proceeding both in Ceylon and at the Kew Gardens at home into the disease attacking Ceylon cacao are interesting from the lessons they teach regarding the danger of over-shading cultivation. It is possible that coffee-planters may find them of interest. Some years ago, the Ceylon cacao plantations were subjected to very serious attacks of *Helopeltis antonii* (mosquito blight), which led planters to resort to shade as a protection against the pest. In this they succeeded. But it was only out of the frying-pan into the fire. For both the local and the home authorities agree

COFFEE SHADE TREE.

Sun-dried Erythrina Lithosperma loppings, &c., contain per ton:—

61.50	lbs. Nitrogen.
57.38	" Potash.
14.92	" Lime.
13.68	" Phosphoric Acid.

Seed cured under Messrs. Sutton and Sons' advice.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs.6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE,
Shencottah.

as to the cause of the disease, however much they differ as to its exact nature of attack. The disease, they hold, was induced by the moist and sour state of the soil, which was brought about by excessive shade. Draining, thorough cultivation, liming, and gradual thinning out of the shade are all recommended as means to sweeten the soil. Incidentally we may note that the request of the Governor of Ceylon to have a specialist sent out from home to investigate the disease has been curtly refused by Mr. Chamberlain.

The Market.

During October the European stocks increased to the extent of 15,000 tons, and the world's visible supply by 8,730 tons, according to the *P. M. Review* of 13th ultimo. This has brought the latter up to the large total of 360,040 tons. Such an amount is sure, for a time at least, to have a depressing effect upon the various markets, but it must not be forgotten that the marketing of the Brazil crop has taken place this year with extraordinary rapidity, so that there is every reason to expect a falling off in the receipts at Rio and Santos before long. Another hopeful feature for the future of prices is that the deliveries have shown a remarkable increase, the total during this year in Europe and the United States amounting to 642,420 tons, against 572,093 tons last year. This increase, however, is not entirely in the consumption, but partly in the distribution of larger stocks over the interior of the various countries, the figures for which are not included in the monthly returns. A large business has been recorded in the terminal market at fluctuating though mostly rather lower prices, but only a very small trade has been done either for home consumption or export. Prices have, however, settled down more regularly from the semi-panic of last week, and several parcels disposed of then have since been resold at a considerable advance.

THE CULTIVATION OF COFFEE IN INDIA.

AREA.

THE following is the full text of Mr. J. E. O'Connor's, Director-General of Statistics, report on coffee for 1896, published at Calcutta on the 19th ult., a summary of which we have already given:—

At the end of 1896 there were 289,084 acres of land under coffee in India, all, with the exception of 319 acres in Burma, in Southern India. The cultivation of coffee is in fact restricted for the most part to a limited zone in Mysore, Coorg, and the Madras districts of Malabar and the Nilgiris. In Mysore there are 141,528 acres, in Coorg 84,820 acres, and in the Nilgiris and Malabar 41,208. If to these are added 5,564 acres in Travancore and Cochin, we find about 94.5 per cent. of the coffee-bearing area of India concentrated in the elevated region above the south-western coast where the rainfall is heavy and the climate generally approximates to that of the coffee-bearing area of Ceylon.

In the Madras Presidency coffee is not grown to any extent, except in the two districts already mentioned and in Salem and Madura. The only other province in which coffee is grown is Burma, mostly in Toungoo, and the cultivation there is of recent origin and very limited extent.

The area in Madras has manifested a tendency to contraction since 1893. In Coorg there has been a greatly expanded cultivation since 1894; in Mysore there has been a steady and considerable increase since 1889, the year in which prices took an upward turn. In Travancore and Cochin there has been no advance, and indeed many coffee-growers in Travancore have abandoned that industry for the less precarious cultivation of tea.

The largest part (nearly half) of the area under coffee is in Mysore; there is 29·3 per cent. in Coorg and 19·7 per cent. in Madras.

PRODUCTION.
The yield in 1896 was slightly in excess of 26 million pounds, being 35 per cent. lower than in 1895 and also lower than that of every other year since 1885 with the one exception of 1890. In Madras there was a larger yield on a smaller area in 1896 than in 1895; but in Mysore, Coorg, and Travancore and Cochin the reduction in the yield was remarkably great. But neither the decline in Coorg in 1896, nor the increase in that province in 1895, was as considerable as it would seem to be. The increase in 1895 was indeed probably more apparent than real, being due to a change of practice in calculating the outturn of that year. Before 1895 the only basis for an estimate of the yield was found in the returns furnished by toll contractors of the number of carts conveying coffee which passed through the toll gates, the quantity carried by each cart being assumed to be half a ton. In that year this practice was displaced by another, the yield being estimated to be 2½ cwt. per acre on plantations managed by Europeans and 1 cwt. per acre on plantations managed by natives. Though this is also a rough and imperfect method, it is possible that it gives less inaccurate results than the method which it has superseded.

Taking 100 to represent both area and production in 1885, the ratio of yearly increase or decrease is shown in the subjoined table:—

	Area.	Production.
1885	100	100
1886	97	90
1887	103	109
1888	104	76
1889	110	85
1890	114	63
1891	111	113
1892	110	97
1893	109	109
1894	117	101
1895	119	115
1896	122	75

The increase in the area in Mysore and Coorg since 1889 is due to the encouragement given to planters by the rise in prices which began in that year.

In 1896 the yield varied enormously in the different localities, the returns giving 469lbs. in the Nilgiris; 213lbs. in South Canara; 81lbs. in Mysore; 60lbs. in Coorg; 75lbs. in Malabar.

A noticeable feature in the returns is the record of a yield of 450lbs. an acre in Cochin in 1893, followed by a yield of 175lbs. in 1894, of 310 in 1895, and of 70 in 1896. The brief explanation given by the local authorities is "that a good crop is almost invariably followed by a poor one." The returns, however, would seem to be of doubtful accuracy. As regards Travancore, it is stated that planters are unwilling to give any information.

PERSONS EMPLOYED.

According to the returns there were, in 1896, 46,217 persons permanently, and 72,136 temporarily, employed on the coffee estates, making a total of 118,353 persons, which is equal to two persons to five acres (2·44 acres to one person), while in tea estates the average is nearly seven persons to five acres. The difference is explained by the much greater labour required in the repeated plucking of tea, the flushes of tea in the plains extending from March to November, and in the subsequent processes of preparing the leaf for the market. There is but one plucking of coffee in the year, and it is only then, while the berry is being prepared to be put on the market, that labour is at high pressure on a coffee estate.

EXPORTS AND CONSUMPTION.

The following figures are the average of the five years ending 1896-97:—

	lbs.
Indian coffee { Production	34,750,765
Exports	30,428,563
Left in India	4,322,202
Foreign coffee { Imports	1,364,406
Re-exports	738,102
Left in India	626,304

It appears, therefore, that 87·6 per cent. of the production is exported, and that of the coffee consumed in India, foreign coffee represents little more than one-seventh the quantity of Indian coffee. The rate of consumption is about half that of tea, amounting to only 0·017lb. per head of the population. It is said to be rather freely

drunk by the native population in Southern India, but it is practically unknown to the native population elsewhere in India.

The principal consumers of the 23,609,264lbs. of Indian coffee exported in 1896-97 were:—

	lbs.
United Kingdom	11,840,860
France	8,049,552
Austria-Hungary	790,832
Asiatic Turkey and Persia	720,272
Germany	628,656
Arabia	587,776
Ceylon	354,592
Australia	325,584

Thus the United Kingdom, which takes about nine-tenths of our tea, takes only about half of our coffee. It is interesting to notice that Arabia takes some of our coffee (it has been said that it is again exported as genuine Mocha) and that Ceylon is also a consumer. There should be an opening for a larger market in the Turkish and Persian ports at the head of the Persian Gulf.

Attention may perhaps usefully be drawn to the not inconsiderable quantity of foreign coffee imported (chiefly from the Straits) and consumed in India.

PRICES.

There is no trustworthy or complete record of the prices in India of Indian coffee; and in answer to enquiries, I am informed that there are no materials for the preparation of a record of prices, that the prices in fact depend upon and follow the fluctuations of prices in London of Ceylon plantation coffee, the price of Indian coffee being about 5s. less than the price of Ceylon coffee. This being so, the prices in London, in February of each of the last twenty-two years, of Ceylon coffee (plantation) are here subjoined:—

	Per cwt.		Per cwt.
	s. d.		s. d.
1876	89 0	1887	77 0
1877	85 3	1888	72 0
1878	80 0	1889	90 0
1879	64 0	1890	99 0
1880	68 6	1891	104 6
1881	59 0	1892	105 0
1882	64 0	1893	108 0
1883	74 0	1894	100 0
1884	69 0	1895	104 0
1885	54 6	1896	93 0
1886	56 0	1897	98 0

Ten years, from 1879 to 1888, of depressed prices, combined with the havoc wrought by the borer and the leaf disease, greatly discouraged coffee-planting in India and Ceylon, and the prospects of the industry seemed so forlorn that both in Ceylon and India much coffee land was placed under tea. In 1889, however, there was a sharp rise in prices, and the level has ranged high since that year under the operation of speculative corners, political troubles in Brazil whence the main supplies of the world are derived, and other circumstances. In 1896 prices receded to a lower level, owing principally to reports that the Brazilian coffee crop would be the largest on record. In March 1897 prices rose again to 102s., falling in July to 98 and in August and September to 96s. In October there was a recovery to 98s., which is a high level though lower than the range of price since 1890.

TEA.

Oxidizers 'again.' Yet another "cool oxidizer" has been invented. It is known as "Hurst's Patent," and is being manufactured by the Robin Hood Engineering Company of Nottingham.

Fall in price of teaseed. From all sides, India and Ceylon, do we hear the same tale of the collapse of the tea-seed market. In Ceylon, the decline has perhaps been greatest and most sudden, good indigenous falling to as low as Rs.30 per maund, with prospects of even lower levels being reached. The explanation is simple and satisfactory: restriction of extensions owing to low prices and high exchange.

A good roller.

We have received some copies of testimonials from India and Ceylon planters regarding the working of Messrs. Davidson & Co.'s new Sirocco Rollers. From all we can gather—and without, we trust, a suspicion of inspiration—the machine seems really an excellent one. While taking a full charge of 350 to 400 lbs. leaf, it needs under 2 H. P. to drive it, and moreover keeps the roll quite cool. The contrast between this roller and the well-known pattern of the old-style Little Giant is startling. The latter only takes from 70 to 80 lbs. of withered leaf, requires *over* 2 H. P. to drive it, and certainly does not keep the roll cool. We have been assured, however, on very good authority, that the term 2 H. P. is a very deceptive one, if taken to mean that a 2-H. P. engine will drive a roller requiring that amount of power. In fact, it has been demonstrated, we understand, that nothing under a 4-H. P. engine will drive the smallest and easiest running roller on the market.

The American Customs standard.

The agitation conducted against the sieve test is by no means at an end, as both China and Japan are protesting against the new regulations. It is yet satisfactory to learn that the Board of Tea experts appointed to consider the objections raised against the present standard have recommended the Treasury Department to adopt specific standards for Canton tea. The regulations regarding dust in Ceylon and India tea are modified, so that siftings from India and Ceylon teas may be resifted through a No. 26 sieve of No. 30 wire to separate needle leaf from dust. It is also recommended that all earlier rejections now open to appeal be settled as to dust, in accordance with the new provision for separating needle leaf by a No. 26 sieve.

The Board recommend that “flavor,” as referred to in the regulations, be considered by the Examiners as an index to quality and fitness for consumption, and must not be limited to the particular characteristics of the tea districts from which the standard comes. The Board advise fixing standards for next season early this month, and the appointment of a new committee, and to facilitate these recommendations tender their resignations to take immediate effect.

The Market.

INDIANS.—The demand has been fairly active, says the *P. M. Review* of 13th ultimo, but as the supply has been large, the market was less firm at the later public sales. Common descriptions sold irregularly, on the whole, at easier rates, and were readily taken at the decline. These kinds are now as cheap as they have been at any time this season, and, judging from the recent Calcutta reports of the weather, an increase of the latest estimate is not likely. It is, therefore, quite possible that values have now touched the lowest point. The supply of the medium grades has been large and varied, and those with a thin infusion, although good in appearance and make, have attracted but moderate attention, and are slightly cheaper. On the other hand, the more desirable

sorts, especially Pekoe Souchongs giving a strong infusion irrespective of leaf, brought quite former prices, and probably will continue to do so, as the supply of these kinds is not likely to be in excess of requirements. For the finer qualities there is a steady inquiry, and as the supply is moderate, prices are well maintained, particularly for those with strength and appearance. There were 57,160 packages brought forward at the public sales, and a larger quantity than usual was withdrawn, viz., 7,030.

CEYLONS.—There is scarcely any change in the Ceylon market, as the conditions prevailing during the last month still continue, namely, an absence of sufficient tea to meet the demand from the trade, resulting in strong competition and firm prices. For the common descriptions the demand has been rather more active, but no alteration in values has taken place, and the medium grades of both whole and broken leaf were freely taken at late rates. Thick liquoring teas continue scarce, and the few parcels offered realised extreme prices. At the public sales 16,440 packages were offered, of which about 2,000 were withdrawn, most of which afterwards found buyers.

China undismayed.

The Foochow Tea Improvement Company, whose pre-company ill-success in London we have already noted, lays great stress on the advantage China now possesses in the matter of cheap silver. The Company has now been floated, and the following extract from its prospectus will be found interesting:—

Recent experiments in the manufacture of tea carried out by the Association at Pehling with the aid of machinery have been attended with much success, inasmuch as teas of greatly improved character and quality have been produced, and it is, therefore, considered that the time has now arrived when capital on a larger scale can be successfully employed in various parts of the Fokheien Province. In this connection, it should be stated that the Chinese Government officials have shown themselves favourably disposed towards the Company, and have expressed their intention to protect and assist it in every way.

The property to be acquired from the Association, in consideration of the allotment of the 500 fully paid up shares, comprises the goodwill of the business and all trade marks and chops used in connection therewith: the lands and premises in the Fokheien Province of China used for the purposes of the business, with a two-storied factory, 100 feet by 48 feet, and a house for the Chinese manager, an office, and coolie quarters; also machinery, consisting of a new “Venetian” firing machine, and three new rolling tables, the largest being a Jackson’s 24-inch; also a sifting machine; the whole being worked by a water wheel 12 feet in diameter and 2 feet broad. Also the following machinery, namely: One Campbell’s Oil Engine, 10 horse power; one Davidson’s Sirocco, two Blackman’s Fans and one Davidson’s Cutter; also 4,400 withering trays and stands and scales and requisite godown appliances. The Company is also purchasing a cash balance at the credit of the Association, amounting to \$1,795.16. It is proposed that as the lands are situate in China they shall be vested in two Chinese shareholders as trustees for the Company. This course is necessary because doubts exist as to the legality of foreigners holding lands in China.

The Chinese growers in the vicinity of the factory, who are extensive growers of tea, have always been willing sellers of green leaf, of which an ample supply is at all times available for manufacture at the same price, as the price which they can obtain from their own countrymen, and from the first they have always welcomed foreigners.

As regards the prospects of the financial success of the Company, the directors would particularly draw attention to the advantage China now has over India and Ceylon in cheap silver, the exchange value of the rupee exceeding that of silver by fully twenty-five per cent. This fully compensates for the taxation which China tea has at present to bear. The cheapness of land, the low scale of

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Correspondence and matter for publication to be sent to Editor, this paper, Coonoor.

wages, and the excellent quality of Chinese labour are likewise facts which cannot be overlooked.

The machinery has been erected by, and is in charge of, an English Engineer, who is the manager of the Company's property and resides at the factory, and who has for some years been in charge of a tea factory in India.

The Chinese manager resides at the factory, and was recently sent to Ceylon by the Association, where he had practical experience in tea-making on several large estates.

THE CULTIVATION OF TEA IN INDIA.

THE following is the full text of Mr. J. E. O'Connor's, Director-General of Statistics, Tea Report for 1896, published at Calcutta on the 18th ultimo, a summary of which we have already given :—

AREA.

The area under tea in India at the end of 1896 extended over 433,113 acres, more than two-thirds (67·4 per cent.) being in the valleys of the Brahmaputra and Surma, which contain as much as 291,909 acres, namely, 165,079 in Assam (the Brahmaputra valley) and 126,830 in Cachar and Sylhet (the Surma valley). In extent of cultivation Bengal comes next, though the acreage is much smaller than in either of the divisions of Assam, the area under tea being 105,540 acres, or 24·36 per cent. of the whole.

The cultivation of tea is, therefore, to the extent of more than nine-tenths of the whole area, limited to the two provinces of Assam and Bengal.

The other tenth is divided between Northern and Southern India, thus :—

Northern India—

	Acres.
North-Western Provinces	7,919
Punjab	9,830
Total...	17,949

Southern India—

	Acres.
Madras	5,270
Travancore and Cochin	11,444
Total...	16,714

The principal localities in each province where tea is grown are these :

In Assam.

	Acres.
Surma Valley :	
Cachar	60,374
Sylhet	66,456
Brahmaputra Valley :	
Sibsagar	66,429
Lakhimpur	48,152
Darrang	31,867
Nowgong	12,617
Kamrup	5,298

In Bengal.

	Acres.
Darjeeling	47,027
Jalpaiguri	50,550
Chittagong	4,511
Lohardaga and Hazaribagh	3,352

In the North-Western Provinces.

	Acres.
Kumaun	3,091
Dehra Dun	4,828

In the Punjab.

	Acres.
Kangra	9,830

In Southern India.

	Acres.
Nilgiris	5,020
Travancore	11,377

There is a small area of 1,201 acres in Upper Burma, but in this province the leaf which is produced is not made into tea, but is pickled to be eaten by the Burmans, and the area and production may, therefore, be left out of account.

There are also a few small areas in Goalpara, the Naga hills, and the Khasi and Jaintia hills, in the Chittagong hill tracts, in Simla, Malabar and Cochin.

Tea cultivation in India has been mainly concentrated in tracts where a heavy rainfall and a humid and equable climate permit of repeated flushes and pluckings of the leaf. The yield is largest in

Travancore where it is reported to have averaged, in 1896, 628 lbs. to the acre. In the valleys of the Brahmaputra and Surma the yield averages about 443 lbs. and in Bengal about 394 lbs., the yield in Jalpaiguri (the Duars) being 534 lbs. and in Darjeeling about 276 lbs. Elsewhere the yield is much lower.

The area under tea has expanded from year to year without pause during the twelve years comprised in the second of the tables. In 1885 the area was about 284,000 acres; in 1896 it had increased to 433,113 acres, the increase being in the ratio of 52·5 per cent. The largest expansion last year occurred in the valley of the Brahmaputra and there was also a material increase in the Surma valley. In Bengal there was but a small increase, and in the North-Western Provinces and Madras there was an actual decline, while there was but a fractional increase in the Punjab. The expansion in Travancore is noticeable.

The number of acres added to the tea-growing area each year has been :—

1886	14,294	1892	12,432
1887	14,584	1893	20,970
1888	11,524	1894	4,688
1889	9,374	1895	15,190
1890	11,126	1896	17,396
1891	17,610		

The average addition in the last five years was much larger (14,135 acres) than the average addition (12,844 acres) in the five preceding years. The increase in 1896 was at the rate of a little more than 4 per cent.; in 1895 the increase was at the rate of about 3½ per cent.

The plantations vary greatly in size. In Assam, where the industry is mainly carried on by Europeans with ample capital where fusions of estates have been carried on for some years in view to economy of management, and where most plantations have large unplanted areas attached to them, the area of a plantation averages as much as 365 acres. In Bengal the average area of a plantation is 218 acres; in the North-Western Provinces the average falls to 95 acres, while in the Punjab, where natives grow tea extensively in the Kangra valley, there are less than four acres to each plantation and for the same reason this small area is but slightly exceeded in Travancore. In Madras the average is about 61 acres.

PRODUCTION.

The quantity of tea produced has increased in the past twelve years in much greater ratio than the area under cultivation, for while the area has increased by 52 per cent., the increase in production has been 118 per cent.

Representing the area and production in 1885 by 100 in each case, the ratio of increase in each compared with that year is stated below, the actual increase of production each year over the production of the preceding year being also stated :—

	Area.	Quantity produced.	Actual increase annually in lbs.
1885	100	100	...
1886	105	115	10,899,835
1887	110	129	9,826,270
1888	114	139	7,540,462
1889	117	149	7,250,331
1890	121	156	4,993,531
1891	127	173	11,831,496
1892	132	170	—1,873,628
1893	139	185	10,253,626
1894	141	188	2,465,144
1895	146	200	8,694,783
1896	152	218	12,617,847

PERSONS EMPLOYED.

The number of persons employed in the tea industry in 1896 is returned at 481,866 (permanently) and 106,685 (temporarily) or altogether over half a million people (588,551 persons), which would work out to about 1·36 persons to the acre.

EXPORTS AND CONSUMPTION.

The tea produced in India is exported mainly to the United Kingdom to the extent of about 96 per cent. of the average production. The subjoined figures give approximately the quantity of tea consumed in India, the figures representing the average of the last five years :

		lbs.
INDIAN TEA	{ Produced	137,677,744
	{ Exported	132,431,125
	{ Left in India	5,246,619

FOREIGN TEA	lbs.		
	Imported	...	7,842,608
	Re-exported	...	4,636,784
	Left in India	...	3,205,824

Thus the average consumption of all tea in India seems to be about $8\frac{1}{2}$ million pounds, of which $5\frac{1}{4}$ million are Indian and nearly $3\frac{1}{4}$ million are foreign. Ceylon provides India with about a million pounds of the foreign tea imported, the bulk of the imports being mainly Chinese.

This consumption comes to only 0.029 lbs. per head of the population according to the census of 1891, or less than three hundredths of a pound, a quantity which contrasts strongly with a consumption in the United Kingdom of about $5\frac{1}{2}$ lbs. per head. Broadly, it may be said that the Indian consumption of tea per head is exceeded by the United Kingdom two hundred times. Indeed, such as it is, the consumption of tea in India is to a substantial extent due to the European population, for more than one million pounds are purchased for the British army, and a larger quantity must be consumed by the European and Eurasian civil population. However, the consumption is increasing amongst the population of the larger towns, specially the Muhammadans, and there is room for great expansion in this direction.

As stated above, the principal market for Indian tea is found in the United Kingdom, as will be seen from the figures appended, which state the quantity exported (in lbs.) in the last two years:—

		1895-96.	1896-97.
<i>By Sea:—</i>			
To United Kingdom	...	123,947,369	135,456,884
Persia	...	3,188,099	1,993,823
Russia	...	486,255	457,634
United States and Canada	...	989,065	1,607,731
Australia	...	6,774,652	6,155,895
<i>Trans-frontier:—</i>			
Kabul, Kashmir, and other countries on the North-Western Frontier	...	1,195,264	1,499,120
Other trans-frontier countries	...	6,048	13,552

PRICES.

The prices of tea in Calcutta have fluctuated greatly since 1873. Taking the price in March 1873 to be represented by 100, it appears that until 1885 the level was well above that point, varying from 110 to 148. In that year, coincidentally with the great fall in exchange and in general prices, the level fell to 90, and a low level was maintained in the following years until 1895, when there was a rise again to a high level. In the last two years, however, there has been a further decline in price. These figures all represent the course of prices of Fine Pekoe in January of each year as given by the Bengal Chamber of Commerce. The level for each year from 1873 is stated below:—

1873	...	100	1882	...	126	1891	...	81
1874	...	123	1883	...	110	1892	...	71
1875	...	123	1884	...	116	1893	...	87
1876	...	136	1885	...	90	1894	...	52
1877	...	148	1886	...	90	1895	...	97
1878	...	135	1887	...	77	1896	...	84
1879	...	129	1888	...	84	1897	...	64
1880	...	126	1889	...	77			
1881	...	135	1890	...	63			

In the Statistical Bureau the average prices of the various descriptions of tea sold at the public sales held in Calcutta during the tea season have been computed for some years past and the results are regularly published in the review of the trade of India. From these returns of prices the figures below are taken, being the prices in annas and pies per pound of the three descriptions which form the largest proportion of the tea sold:—

	Broken Pekoe.		Pekoe.		Pekoe Souchong.	
	As.	Pies.	As.	Pies.	As.	Pies.
1889	...	9	9	7	5	5
1890	...	8	10 $\frac{3}{4}$	7	2	5
1891	...	8	7 $\frac{1}{2}$	7	0 $\frac{1}{2}$	5
1892	...	11	3 $\frac{1}{2}$	8	9	6
1893	...	9	2 $\frac{1}{2}$	7	2 $\frac{2}{3}$	5
1894	...	11	8	9	4 $\frac{1}{2}$	7
1895	...	9	0	7	3 $\frac{1}{2}$	5
1896	...	8	7 $\frac{3}{4}$	6	9 $\frac{2}{10}$	5

DISTRICT ASSOCIATION.

KANAN DEVAN.

Quarterly Meeting held at Manalle on 27th Nov. 1897. Present:—Baron J. VON ROSENBERG (*President*); MESSRS. J. HAMILTON HUNTER, C. BURN MURDOCH, W. MILNE, R. HEDGES, W. D. MARTIN, A. F. MARTIN, T. W. SCHMID, F. ARMSTRONG, A. H. SHARP (*Honorary Secretary*).

Notice calling the meeting was taken as read.

Read and confirmed minutes of last meeting.

Insanitary Condition of Bodinaikanur.—Read letter from the Hospital Assistant of Bodinaikanur. Recorded.

The following resolution was passed: That the Madura District Board do not take sufficient steps to keep Bodinaikanur in a fairly sanitary condition, the funds at the disposal of the Union being apparently insufficient.

Dilatoriness of the Travancore Police.—The Hon. Secretary stated that he had written to the Superintendent of Police, Trivandrum, but had not yet received a reply.

Bodinaikanur Rest House.—Mr. Milne stated that arrangements had been made to commence the building, but that it was at present delayed pending reply from the Assistant Forest Officer at the Periyar with reference to the necessary timber. The masonry work will be commenced at the end of the N. E. Monsoon.

Telegraphs.—The Honorary Secretary stated that he had written to the Director-General of Telegraphs, Calcutta, on the 5th September last, but had up to date received no reply.

Munaar Bridge and Devikulam to Mettu Road.—The promised grant to the Munaar Bridge, viz., Rs. 600, had been received, but the Honorary Secretary had not yet received either the grant or a satisfactory reply with regard to the Devikulam to Mettu Road. It was resolved that further action should be deferred until the arrival of the Chief Engineer, who was shortly expected.

By the President. GENTLEMEN,—Before passing to the regular business of this meeting, I would like to say a few words as to the work done at the last meeting of the U. P. A. S. I. which I attended on your behalf. You have no doubt all of you seen the full reports which appeared in the newspapers of proceedings in open meeting, and now that full proceedings are printed and circulated, you can gather all further information as to a large part of the work done in Committee. I therefore propose to merely refer to some points in which we are especially interested, and shall then be glad to reply to any questions that any of you may wish to put to me.

First as to procedure.—You are doubtless aware that a General Committee Meeting was held on the day before the Regular Meeting opened. This plan worked very well, and I hope to see it adhered to in the future. By its means we were able to briefly discuss all the questions and to decide in what form they should be presented to the General Meeting. It also enabled us by a certain amount of give and take to arrive at a fairly united expression of opinion and vote in open meeting—a matter of some importance in many of the questions we had to deal with.

Passing next to the *Report of the S. I. P. E. C.*, which is of as much importance to ourselves as to any other Association, more so than to some. It was the unanimous opinion of the delegates that this was a most painstaking and masterly exposition of the difficulties and drawbacks the planter experiences under the present law, and that Government would not and could not refuse us sufficient remedies in the near future. With regard to the *Constitution and Financing of the United Association*, the scheme ultimately adopted was arrived at after very full discussion, and is to a large extent a blend of the various opinions and schemes put forward. It enables such Associations as pay to the full extent of their area to command a large number of votes; in other words, the largest interests will, if they pay up, command the vote of the meeting, as it is only right that they should, while the smaller Associations will be able to increase their voting power and by the increased number of delegates they can send have their interests thoroughly represented.

Nor is there any doubt that the smaller Associations will in the future receive as much attention to their wants and wishes at the hands of the more powerful Associations as they have in past.

It is hoped that the new constitution will render the financial position of the U. P. A. S. I. secure, while the large number of delegates permitted to each Association will to a certain extent stamp the meetings with that "plebiscite" character which was one of the aims of the promoters of Individual Membership.

I am in favour of our taking the full number of votes possible, but this is a question for you to decide.

Exchange and the closing of the mints.—A few months ago the question of exchange was a very serious one to the planter. I do not deny that it is so even at present, though the interval has witnessed a considerable fall. This question in connection with the closing of the mints was taken up at the last moment by the U. P. A. S. I., and Mr. Acworth in a very able speech placed the whole matter before us. He advocated a memorial to Government on the subject being drawn up by the Association and sent to the various Associations and merchants dealing in exports and to the Chambers of Commerce. This proposal was agreed to, and Mr. Romilly and Mr. Hockin have drawn up a letter which is able and to the point and in general deserves our support. I say in general, because there is one point which I share Mr. Romilly's diffidence about as shown in his covering letter, i.e., para. 7, which deals with the question of an export duty. It may be more than probable the Government will not listen to our memorial without the financial *quid pro quo* in the shape of an export duty voluntarily suggested, but even then I distinctly disapprove of the proposal apart from the fact that an export duty is against the spirit of British commerce and that it would hardly be supported by other exporters. I think it might lead us into a position not better but worse than our present one. And this for the following reasons, which I think have been lost sight of by Mr. Acworth:

In 1891, before the mints were closed and when the value of silver, though higher than it is at present, was pretty low, exchange ruled very high for a considerable time. As far as I recollect it touched nearly, if not quite, 1s. 9d. It seems to me, therefore, even with open mints, quite within the bounds of possibility that exchange might run up to 1s. 6d. at present value of silver, while it might long stay at 1s. 4d. Add to this an export duty, and our last state would be worse than the first.

On the other hand, it should not be forgotten, and it has certainly been ignored, that since the mints have been closed, exchange has not been over 1s. 4d., while it has occasionally been down to 1s. 2d., or even below that.

I may not be quite correct in my figures, as I am quoting from memory, but they are sufficiently near to bear out my argument. I think I am right in saying that even when the mints were open, exchange on India never dropped to par value of silver or anywhere near it, showing that there are other factors in existence which tend to keep exchange on India higher than that on other silver currency countries. It seems to me quite possible that the closing of the mints has less to do with the present high rate of exchange than is presupposed in the memorial. I daresay I am not expressing myself correctly, but you will understand the drift of what I am saying.

But there is one thing that the closing of the mints probably can be credited with, which in the first instance it principally aimed at, i.e., in spite of occasional plunges, a very fair stability in exchange as compared with that of some years before such closing. That has been an undoubted boon to us and we should not forget it.

Mr. Gompertz's scheme of an export duty on a sliding scale may be a way out of the danger I have shown, and deserves, I think, more careful consideration than appears to have been given to it.

I would propose that we support the memorial with the exception of clause 7, and that a letter be drafted showing our reasons for objecting to that clause after ascertaining correctly the facts and figures which I quote merely from memory.

Cost of casket and address.—This, as you will remember, we decided ought to be met by voluntary subscriptions, and I did my best in committee to negative its being paid for out of general or reserve funds. The sum was small, and funds in hand were ample to meet it, but I stated our opinion that the precedent was bad. Our opinion was quite unsupported excepting by South Travancore, so I had to give in. Our subscriptions were returned.

Roads and Communications.—You have seen the resolution that

was passed at the meeting at my instance. I have only to add that the question of specially supporting applications, apart from mere forwarding them, would be left to the decision of the General Committee.

Re-opening of the Mints.—Read draft letter from the Chairman, U. P. A. S. I., and letter explaining Mr. Gompertz's scheme. Baron vonRosenberg proposed that the letter be supported eliminating clause 7, and that we consider Mr. Gompertz's scheme of an export duty on a sliding scale deserving of consideration as a way out of the difficulty we find in supporting such clause as it stands. Carried.

Funds for current year's expenses.—*Surianalli Road.* Proposed by Baron vonRosenberg that a charge of 4 as. per acre be levied for the Devikulam to Mettu Road for the current year, and that the cost of bridges at Punnar and Sembatulavu be borne by the Association the following year, provided that the subscription of 4 annas per acre during that year admits of it.

Subscription to U. P. A. S. I.—It was unanimously resolved that the full limit of anna 1 per acre be subscribed and that 9 pies per acre be subscribed for delegate's expenses, writer's pay, etc.

Resolved that the cost of the new store to be built at the foot of the ghat be divided *pro rata* between the estates making use of it.

U. P. A. S. I. Agricultural Chemist and Importation of Laid Birds.—Resolved that as an Association we are not prepared to subscribe to either.

Dacoity in the Cumbum Valley.—Read letter from Mr. A. J. Veale and minutes of General Meeting of the C. T. P. A. with reference to the above subject. Resolved that this Association strongly support the resolution passed by the Central Travancore Association, and testifies to the general lawlessness of the Valley teeming as it is with Kullans and Muravans.

The Apothecary's request for leave.—Resolved that the Apothecary be allowed one month's leave.

The Amanaiakanur and Bodinaikanur Agents.—Proposed by Mr. A. F. Martin and seconded by Mr. W. D. Martin that at each meeting of the Association an account of the sums due by members to the above mentioned agents shall be laid on the table. Carried.

Bodinaikanur to Tulican Tavalam Road.—The Honorary Secretary stated that the inhabitants of Bodinaikanur had signed a petition to the President, Local Fund Board, Madura, requesting that a road should be cut between Bodinaikanur and Tulican Tavalam. It was resolved that this Association unanimously support the petition.

Read letter from Baron vonRosenberg to President, Local Fund Board, dated 16th October 1897, with reference to roads. This letter still remains unreplyed to. Recorded.

Export Duty on Coffee.—Read letters dated 27th February 1897, 27th April 1897, and 22nd November 1897 from Baron vonRosenberg to the Dewan of Travancore, pointing out to him the injustice of the export duty on coffee as levied at the various mettus.

Resolved that as no notice had been taken of this appeal, the Dewan's attention be again called to the matter, and that the Association expresses its regret that the Dewan should have been unable to give his attention to this cause of complaint sooner.

Transport from the Hills.—Proposed by Baron vonRosenberg that the rates for transport from the various estates to Bodinaikanur be circulated in English and Tamil to the Superintendents who shall see that they are adhered to. Carried.

The Post Offices.—Read letter from the Postmaster-General Mr. Payne stating that although the guarantors of the Talliar Post Office are liable for all loss during each and every month during the year, they are not entitled to a refund of profits made during the other months; that is to say that while the guarantor is making a loss, the Post Office still shows a profit.

It was resolved that this Association address the Postmaster-General on the subject direct expressing their surprise at this.

It was also resolved that the Postmaster-General be addressed on the condition of the Devikulam Post Office, the delay in the despatch and surrender of parcels and letters, and the generally inadequate arrangements to deal with the large increase in postal traffic.

The meeting closed with a vote of thanks to the chair.

A. W. SHARP,

Honorary Secretary

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MARKET SUPPLEMENT.

SATURDAY, DECEMBER 11, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (November 19, 1897) says:—The market continues in a weak and unsettled condition, and although the supplies brought forward in Public Sale were on a very small scale, there was little or no competition, the greater part having to be bought in.

No East India was offered.

The Central American catalogued met little demand, only a few parcels of Colory Columbian and Guatemala being disposed of at about previous rates.

Futures after advancing 1/6 during the first part of the week gave way again on the continuation of heavy Brazilian and an estimate of Messrs. Karl Krische & Co. of 9 million bags for the present Brazil crops and 10½ millions for the growing; quotations at the close mark a decline of 2/- from the best or 6d lower than last week.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending November 17th, 1897, says:—Bank rate 3%. Bombay Exchange closes at 1s 3½d. Brazil Exchange 7½d. Rupee paper 3¼% 62½. Silver 27d per oz.

This market has been dull during the past week, and only a small business has been done at very irregular prices, the quantity offered being on a small scale, and chiefly of an undesirable nature, which shows a further decline, finer kinds about steady. Brazil kinds flat.

At the Dutch sale held yesterday in Amsterdam, 22,079 bags were offered and sold at an irregular reduction of 5 to 10 cents, good ordinary Java selling at 35½ cents against 45 cents in October, and 46 cents in September.

Futures after advancing 6d to 1s close weak owing to an estimate of 10½ million bags for Santos and Rio next crop. Closing prices are—Good average Santos in Havre, March delivery, fcs. 37, in Hamburg pf. 30½, and No. 7 low ordinary Rio in New York \$5.90.

To-day's London official quotations are:—

	Dec. 29/3	March 29/9	May 30/-	July 30/3	Sept. 30/6
SANTOS	...	...	...	...	...
We quote:—					
Ceylon, mid. to good mid.	97/ @ 102/	Costa Rica, mid. to fine...	79/ @ 108/		
Do. small to low mid.	77/ „ 96/	Do. ord. to low middling.	59/ „ 78/		
East India, mid. to good		Jamaica, good to fine ord.	50/ „ 62/		
mid .. 88/ „ 100/		Do. greenish to fine			
Do. small to low mid.	70/ „ 85/	colory...	72/ „ 125/		
Guatemala, mid. to fine...	77/ „ 102/	African	26/ „ 27/		
Do. good ord. to low		Columbian, ordinary	39/ „ 46/		
mid... 60/ „ 76/		Do. good ord. to			
Salvador, good ord. foxy		low mid...	47/ „ 75/		
greenish... 50/ „ 51/		Do. mid. to fine...	76/ „ 100/		

Receipts in Brazil to 9th Nov. compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
Rio	2,146,000	1,701,000	1,207,000
SANTOS	3,691,000	2,841,000	1,878,000
	5,837,000	4,542,000	3,085,000

Auctions:—

20 casks 3 trcs. 5 brls. 2 bags	Plantation
Ceylon sold	... @ 91/6 @ 105/
52 bags East India bought in.	
612 bags Costa Rica bought in.	
804 bags Guatemala, London cleaned, part sold	... „ 95/6 „ 98/
2,475 bags Columbian, chiefly sold	... „ 36/ „ 87/
54 bags Peruvian, London cleaned, bought in.	
222 bags Nyassaland, chiefly sold	... „ 46/6 „ 90/6
100 bags imitation Java from Antwerp, chiefly sold	... „ 47/ „ 51/
34 bags Liberian Ceylon bought in.	
25 bags African Liberian bought in.	
4 bags Liberian Seychelles bought in.	
3 barrels Jamaica bought in.	
8 bags Vera Paz	... „ 79/ „

3 bags Guayaquil bought in.

On Quay Terms:—

250 bags Rio bought in.

1,694 bags Santos bought in.

Landed last week ... 242 tons. Deliveries ... 607 tons. Stock ... 10,148 tons

Do. last year ... 407 „ „ „ 589 „ „ „ 7,958 „

THE UNITED STATES.

			1st November. 1897.	1896.
Stock	...	...	44,120 tons	20,590 tons.
Afloat	...	...	27,230 „	28,230 „
Visible Supply	71,350 tons	48,820 tons.		
Value No. 7	6½ cents.	10½ cents.		
October.	1st Jan. to 31st October	1897.	1896.	
Imports	31,650 tons	26,240 tons	274,590 tons	209,920 tons
Deliveries... ..	29,590 „	25,120 „	262,350 „	217,360 „

BRAZIL.

		Stocks 31st October. 1897.	1896.
Rio	...	406,000 bags	296,000 bags
Santos	...	1,198,000 „	444,000 „
Total	94,350 tons	43,530 tons	

Receipts 1st July to 31st October 1897.

Rio	1,920,000 bags
Santos	3,397,000 „

Exported 1st July to 31st October.

	1897.	1896.
Rio to Europe	600,000 bags	330,000 bags
„ the States, &c.	1,095,000 „	865,000 „
Total from Rio	1,700,000 bags	1,195,000 bags

Santos to Europe	1,980,000 bags	1,560,000 bags
„ the States	435,000 „	555,000 „
Total from Santos	2,415,000 bags	2,115,000 bags

LONDON.

	Quotations 1st November. 1897.	1896.
Middling Plantation Ceylon	99/	102/
Fair Channel Rio, floating terms	29/6	52/
Good channel do.	32/	55/
Good average Santos	29/6	53/

WORLD'S VISIBLE SUPPLY.

	31st October. 1897.	1896.
Europe	194,340 tons	126,060 tons
United States	71,350 „	48,820 „
Brazil	94,350 „	43,530 „
Total	360,040 tons	218,410 tons
30th September.	315,310 tons	218,110 tons

SUMMARY COMPARED WITH LAST MONTH.

European Stocks	15,290 tons	Increase
„ Visible	200 „	Reduction
United States Stocks	2,060 „	Increase
„ Visible	3,170 „	„
Brazil Stocks	5,760 „	„
World's Visible	8,730 „	„

SUPPLEMENT TO "PLANTING OPINION."

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated November 19th, 1897, says :—

QUANTITY BROUGHT TO AUCTION IN LONDON FROM 1ST JUNE TO DATE.

Indian.	Ceylon.	Java.
1897-1898...728,226 packages.	596,081 packages.	19,733 packages.
1896-1897...735,905 "	538,414 "	21,764 "
6,675 pkgs. INDIAN	Total 68,566 packages were offered in public auction this week.	
0,649 " CEYLON		
1,242 " JAVA		

The use of Indian and Ceylon Tea in North America shows decided progress, being 8,464,749 lbs. taken during the last nine months, against 5,622,994 lbs. during the same period of 1896. This increase having occurred in face of somewhat obstructive Legislation, the development is very gratifying. As these restrictions are likely to be removed, there is reason to believe that the use of British Grown Tea will become even more general.

INDIA and CEYLON TEA taken in NORTH AMERICA from 1st JANUARY to 30th SEPTEMBER.

INDIAN.			
	1897.	1896.	1895.
Re-exports from U.K.	1,324,539	897,534	1,272,111
Transshipments from U.K.	2,304,420	1,526,995	1,110,644
Direct Exports <i>via</i> China	280,289	abt. 100,000	abt. 30,000
Total lbs. ...	3,909,248	2,524,529	2,412,755
CEYLON.			
	1897.	1896.	1895.
Re-exports from U. K.	2,581,965	1,963,264	2,051,990
Transshipments from U.K.	1,504,068	856,549	720,589
Direct Exports <i>via</i> China	469,468	218,652	235,601
Total lbs. ...	4,555,501	3,038,465	3,008,180

Indian. Rates were about maintained at the slightly easier quotations ruling towards the close of last year. An Official telegram dated 9th November reads as follows :—"October outturn good, cold weather set in generally." The Official wire gives exports to U.K. for first half of November as 9,990,000 lbs., against 6,700,000 lbs. last year, making the total from 1st April to date 98,130,000 lbs., against 96,560,000 lbs. same date last year.

Week's av. of Tea sold on Garden Account, 1897, 33,161 pkgs., av. 8'44d. 1896, 36,704 pkgs., av. 8'4d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
Pkgs. Price. Pkgs. Price. Pkgs. Price. Pkgs. Price.				
Assam	...17,606 p	9½ 17,757 p	9½ 238,030 p	10½ 242,619 p
Cachar and Sylhet.	10,656 p	7½ 10,117 p	7½ 132,105 p	7 122,574 p

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8'44d.) November 19th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	207 p	7	...	...	...	...	...	...	37½c	7½	...	...	...	...
Curzon	37½ c	7½	...	...	...	...	...	...	26	5½	35	5½	...	...
New Hope	170 p	7	40½ c	9½	44	+6½	25	9½	...	...	...	...	...	...
Travancore	474 p	6½	...	...	...	...	...	...	...	...	1½c	3½	2	2½
Belford	42 p	5½	...	...	16½c	5½	23½c	6	...	...	...	...	10	5½
Carady Goody	128	7½	38	6½	18	+5½	51	8½ 9	11	5	...	...	1	2½
CMR	50	5½	...	...	26	5½	20	+6½	...	...	3	3½	...	...
Glenmary	149 p	7½	111	7 9½	19	5½	...	...	...	...	...	...	19 p	4½ +6½
Sth. Indian TCKK...	105	6½	71	+6½ 8	7	5½	...	...	...	...	...	...	27	3½ 6½

† Prices marked thus represent the highest offer in the room.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
Pkgs. Price. Pkgs. Price. Pkgs. Price. Pkgs. Price.				
Chittagong	100 p 6½	356 p 6½	3,423 p 7½	1,643 p 7½
Chota Nagpore	137 p 5½	127 p 4½	804 p 4½	1,002 p 4½
Darjeeling	1,552 p 10	1,832 p 1/1½	40,328 p 11½	39,002 p 1/0½
Dooars	1,760 p 8½	5,091 p 7½	59,600 p 7½	67,240 p 7½
Kangra, &c.	36 p 5	155 p 5½	4,625 p 7½	3,036 p 7
Neilgherry	207 p 7	72½ c 7½	3,766 p 7	1,622 p 7
Teraí	633 p 7½	806 p 6½	13,902 p 7½	7,431 p 7½
Travancore	474 p 6½	391 p 6½	17,293 p 6½	13,029 p 7
Total sold on Garden Account 1st June to date 1897, 523,876 pkgs., av. 9'06d. 1896, 499,198 pkgs., av. 9'32d.				

Comparative prices of Indian Tea in London :—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	3½d	4½d	4½d	4½d
FANNINGS. (Red to brown, strong rough liquor)	4½d	4½d	4½d	5d
BROKEN TEA. (Brownish to blackish, strong liquor)	6½d	6½d	6d	7d
PEK. SOUG. (Blackish greyish, useful liquor).	6½d	6½d	6½d	7½d
PEKOE. (Greyish to blackish, some tip, useful liquor)	7½d	7½d	7½d	9d
PEK. SOUG. (Blackish greyish, inferior liquor).	5d	5d	5½d	6d
PEKOE. (Blackish greyish, some tip, inferior liquor)	5½d	5½d	6d	7d

Ceylon. With heavier auctions the market was somewhat irregular, and bidding not quite so animated. Buyers have recently operated with caution fearing that when the damage caused by the landslip is repaired, accumulated supplies may somewhat tax the market. Private telegraphic advice gives exports for the first half of the month as 2,700,000 lbs., against 3,680,000 last year, and estimates the total quantity for the month as 7,000,000 lbs., against 7,500,000 lbs. shipped last year. The following averages are worthy of note :—"Associated TCo Silver Kandy," 1/4; "Holmwood," 1/1.

Average for week 8'58d., against 9d. same period last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 970,971 pkgs., av. 7'68d. 1896, 868,541 pkgs., av. 8'21d.

Comparative prices of Ceylon Tea in London :—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6½d	6½d	6½d	7½d
PEKOE (Ordinary leaf, little twist; fair liquor)	7½d	7½d	8d	9d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5d	5d	5½d	6½d
PEKOE (Somewhat bold leaf; indifferent liquor)	5½d	5½d	6½d	7d

Java. The Teas met with fair competition although some parcels sold at slightly easier rates. An invoice from "Goalpara" averaged 10½d. per lb.

Bank rate 3 per cent. Exchange on London three months sight.—Calcutta 1/3½, Colombo 1/3½.

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w.

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w.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, DECEMBER 18, 1897.

[No. 38.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c. Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 24th December 1897.

Kadur.

MUDIGERE, 14th December.—Weather.—Fine bright weather, but a very strong east wind blowing nearly all day. No rain whatever in November, so a shower or two would be welcome now. **Crops.**—Ripening slowly; estimates are reduced on most estates. **Plant-diseases.**—Leaf disease still hangs about and in some estates is spreading. **General Health.**—Fever still prevalent. Two cases of small-pox occurred on one estate, and the Manager sent for the Hospital Assistant from Mudigere six days ago. This official has not troubled to reply or visit the estate. The Manager has reported the case to the Civil Surgeon at Chickmagalur. **Interesting Items.**—Mr. Weir, the Deputy Commissioner, was on tour last week. Planters heard with much regret of the death of Mr. Allardice at Jersey on 12th November. He was for many years at Mylemoney and was much respected.

S. E. Wynaad.

DEVALA, 15th December.—Weather.—Since my last report it is very chilly at nights and until eight in the morning; for the past three days it is cloudy and at intervals sunshiny. **Crop.**—Stripping is not completed as yet, and the crop is below the estimate; the ryots are harvesting paddy; the price of the grain is the same as last. **Health.**—Good. **Labour.**—Sufficient. I wish the Proprietors, Manager, Editor, Printers and the readers of the *Planting Opinion* A MERRY CHRISTMAS and many more happy returns of the same and a great success to the paper.

Nilgiris.

COONOR, 16th December.—Weather.—A little warmer, and clouds are gathering slightly for our usual dose of "Kismis mallay." No rain as yet this month. Coffee ripening up well, little leaf disease still hanging about. Tea flushing fairly. Pruning in swing. **Grain** still dear. **Labour** plentiful. Porcupines on the very active war-path, committing fearful havoc in gardens surrounded by jungle. Planters more or less (usually more) helpless to exterminate the brutes. Am trying roofing felt for godowns as a cheap substitute for iron. Has anyone tried it out here?

HOW TO SUCCEED.

A WORD TO YOUNG PLANTERS.

THIS is not meant to be a sermon. If it were, it would defeat its own object, for it would not be read. We have only a few, simple, commonsense notions to give, and we want to give them straight from the shoulder.

Honest, conscientious young fellows are generally divided into two classes,—those who look at the salary first, and then at their work; and those who look at the work first, and at their salary afterwards. The former want to give a fair day's work for a fair day's pay, and no more. These turn out steady, reliable planters in request indeed, but the demand does not exceed the supply. Ordinary honesty is expected from them, and they cannot complain if their services are not considered exactly invaluable.

The other class of young fellows are of a different sort. They are always striving to show themselves capable of fulfilling higher duties than they are at the moment entrusted with. They want to give more work than they get paid for. Their employers, very naturally, look upon these men as good bargains, not to be lightly parted with. Early promotion comes their way, and they succeed.

Ability alone, industry alone, or the two combined are not enough. Another quality is needed, and that is to identify yourself altogether with your work. To make your "boss" feel that while you are in charge, nothing will be neglected to push his interests to the uttermost. That he can rely upon you as upon himself, nay, even more.

It's not an easy thing to do. Harder still to keep it up. That is one reason why, when found, it is so highly valued. It is not the easiest thing in the world to describe, either.

It is not enough to work the estate as if it were your own. For if you scamp work on your own garden, it's your loss only. Working for another, you must feel that every bit of scamped or bad work passed is a breach of trust to your "boss." It is not your own money you are wasting. It belongs to your employer. In wasting it by passing bad work, you are proving yourself unworthy of the trust reposed in you. It is no good complaining that your boss does not trust you, when he examines your work periodically and puts searching questions that make you feel as if you were at school again. It's no good complaining, we say, when you know very well that it was only yesterday that you let off the weeders the fine they deserved, because you funk'd the row that might ensue. A row, you must remember, that would have been entirely your own fault for having slackened your personal supervision. If you do your work honestly, you need never complain of your honesty being doubted.

Your work should come before everything,—your personal convenience, pleasure and business even.

It should be no source of dissatisfaction that you should think yourself underpaid. By striving to be always worth a little *more* than your salt, it should be rather a cause of secret pride. These "notions" are not empty copy-book moralities. They are solid business-texts that can be relied on for success.

For if you simply do enough work, and no more, to just earn your salary, how can any one guess that you have any reserve capabilities in you? The only way to get a better billet than the one you've got now is to show yourself too

good for your work. Just make your boss feel that he is wasting your services in devoting them to your present work. Make him recognise, by the excellence of your work, that in a more responsible position you'd be a greater success still.

By only doing eight annas of work for eight annas' pay, you'll find your choice of even eight-anna billets very scanty. And as for the one, two and three rupee billets you gaze on wistfully, be very certain that they'll never be reserved for you. They are kept for eight anna men who put in rupee work.

GENERAL NOTES AND ARTICLES.

The taxed breakfast table.

While heavily taxing British grown tea, coffee and cocoa, we allow foreign sugar to enter free. A home exchange urges that part of least of the income derived from the first three should be obtained instead from the latter. Last year the imports and duties were, in millions: Tea 227½m. lbs., duty £3¼m.; coffee 27¼m. lbs., duty £173½ thousands; cocoa 24½m. lbs., duty £10 thousand; total 280m. lbs., duty £4m.

Land in New Guinea.

According to Mr. T. H. Hatto Richards, in the *H. & C. Mail* who has been lecturing on the subject, cultivators of land who know their business may find British New Guinea a profitable field. As far as was practicable, every inducement was given by the Government to the *bona fide* settlers. All that legislation could do had been and was being done but, so far, the attention to the country had been rather disappointing. Land might be found for almost every tropical product, but not in the vast areas that were dealt with in Australia, for instance. To the man with experience and a little capital, who chose a moderate quantity of land with care and prudence after personal inspection, good results should follow. He would find two great things in his favour. First, the country was never visited by cyclones. Secondly, with care and tact on his part he should always be able to obtain a plentiful supply of good labour at an extremely moderate rate. But the man who went to British New Guinea must be prepared to rough it in the truest sense of the word, be ready to put his hand to anything, and wait patiently for the fruit of his labours. The chief difficulty to be encountered was the one of climate, and as to this he thought it might improve in time as the possession was opened up for settlement, and it became possible to use the hilly portions of the country for purposes of change.

MADRAS AGRI-HORTICULTURAL SOCIETY.

FROM the July-September, 1897, Proceedings (woefully delayed in publication) of the Madras Agri-Horticultural Society, we extract the following items of interest:—

Opuntia as cattle fodder.

"Read article from the *Madras Mail* of the 16th July 1897 calling attention to the use of Opuntia as a cattle food and referring to the experiment of Mr. Boyce, a large land and cattle owner in Australia. Mr. Boyce's method is to boil the Opuntia leaves or rather to steam them before giving to the cattle."

"On page 246, *ante* of our Proceedings for December, 1892, there is an article on the Texan method by which the leaves are prepared by

roasting over a fire which cleans the spines away, after which they are greedily eaten by cattle and ponies; this way saves the cost of the square iron tank mentioned in Mr. Boyce's method, the expenses of which would most likely debar ryots from adopting it."

Mangosteen.

By request of Mr. T. J. Ferguson of Calicut, we wrote to Singapore, and received the following reply from Mr. W. Fox, the Assistant Superintendent of the Botanic Gardens: "In reply to your letter of 21st June 1897, enquiring about Mangosteen, I find that we can supply you with a case of 20 large plants free on board a Steamship at Singapore, for Twelve Dollars."

Rubber plant seed.

Read letter from Mr. J. W. Minchin, Honorary Secretary, Nilgiri Agri-Horticultural Society, dated Ootacamund, 17th June 1897, asking for *Castilloa elastica* seed, as a great many planters are desirous of cultivating this in consequence of the high prices ruling for India Rubber.

Letters were written to Dr. George King, Superintendent, Royal Botanic Gardens, Calcutta, and to Messrs. William Brothers, Heneratgoda, Ceylon, for *Castilloa elastica* seed. Dr. King says in reply that *Castilloa elastica* does not seed in his gardens and he does not know of anybody from whom a supply of the seed may be obtained. Messrs. William Brothers replied that they had a small quantity in stock for sale at Rs. 10 per 100 seeds; this item was communicated to Mr. Minchin.

Read letter from Mr. T. J. Ferguson, dated Calicut, 19th August, 1897, advising despatch of a small quantity of Para Rubber (*Hevea braziliensis*), for our acceptance, with the remark that these seeds are the first collected this season.

Fibre plant.

Mr. T. J. Ferguson forwards specimen of a pretty climber, found in Malabar, and wishes to know the botanical name of it.

He was informed that the name is *Holostemma Rheedii* and was asked for seed of it for trial in our gardens.

This plant, according to Watt's Dictionary of the Economic Products of India, is a fibre yielding plant, suitable for cordage and paper making. Royle states that it attains its best condition after the rains. The roots are used as medicine and the leaves and flowers as vegetables in parts of Bombay and Chota Nagpur.

Yca cotton.

An interesting letter on this variety of cotton from Mr. Holmes is published in our Coffee Notes.

Plants for members.

The following is a list of the plants available for distribution to Members:—

- Large plants of *Areca catechu*—Areca nut.
- Do. *Cocoa nucifera*—Golden cocoanut.
- Cola acuminata*—Kola of commerce.
- Myristica moschata*—Nutmeg.
- Castanospermum australe*—Moreton Bay chestnut.
- Tectona grandis*—Teak tree.
- Cedrela toona*—Toon tree.
- Dillenia indica*—
- Garcinia gambogia*—Gamboge tree.
- Oreodoxa regia*—Cuban cabbage palm.
- Elæis guineensis*—West African oil palm.
- Pithecolobium polycephalum*—the new coffee shade tree.
- Camphora officinale*—Camphor plant.

LETTERS TO THE EDITOR.

COONOR MAGISTERIAL SITTINGS.

DEAR SIR,—It would be a convenience if you would announce in your next issue that the Sub-Magistrate of Coonor will in future hold courts at Kotagiri on the first and third Mondays of each month, or, if that be a gazetted holiday, on the next office day following.

E. G. WINDLE.

A GOOD SUGGESTION.

SIR,—How many planters are aware of the unremitting courteous sympathy invariably extended to any planter requiring advice by Mr. Cameron of the Lal Bagh, Bangalore. His wide experience is always at the service of those whom he can assist.

It seems to me that the smallest acknowledgment that could be made would be that of inviting Mr. Cameron to become honorary member of our Associations. I just venture to throw out this hint.

PLANTER.

[A capital suggestion.—ED.]

THE WEAVER'S BEAM TREE.

SIR,—In the last journal of the *Bombay Natural History Society* there is a query about the Weaver's Beam tree (*Schrebera Swietenoides*). The gum is eaten by the aborigines, and it is said that it tends to keep off hunger and thirst, thus enabling them to go for several days without proper food. The gum is said to taste like bad brown sugar.

As this tree is not uncommon in Coorg and in the Malnad, I would be glad to have any information about the gum it produces.

The Forest Department might collect fuller information about this tree.

W. M. D.

POST OFFICE VAGARIES.

SIR,—Along with my tappal on Sunday evening last I received a copy of *Planting Opinion*, which on examination proved to be addressed to "The Editor, *Planters' Monthly*, Honolulu." I only mention this brilliant, but by no means unparalleled, effort on the part of the Post Office authorities, as I noticed, and quite agree with the remark of your Kadur correspondent, who says (referring to the "Sircar") that it is so easy to find fault, and that he thinks when good work is done it ought to be taken notice of. Let it be clearly understood, however, that I do not refer to this matter in a fault-finding way. I merely mention it as I not only consider it good but brilliant work. Hanbalu is my Post Office, and he must be dense indeed who cannot see a resemblance between Hanbalu and Honolulu. They are working up to Honolulu gradually, and little flashes of genius of this kind serve to make life in the "Gorgeous East" all the pleasanter and happier. I think they ought to be encouraged, and I would suggest that the "Sorter" who was responsible for the one mentioned be made permanent with an increase of pay.

ARCHULLU, HANBALU, }
7th December 1897. }

J. AIRD.

POACHING IN MYSORE.

DEAR SIR,—In the *Madras Mail* of December 1st, there is an interesting account of a day's fishing in Mysore. It is, however, painful to note that your correspondent mentions that both poison and dynamite are used with impunity in our rivers to destroy the mahseer and other fish. This would not be tolerated on the Nilgiris, so why should it be in Mysore?

The planting representatives from South and North Mysore have more than once brought to the notice of the Dewan the wanton destruction of game in this State, but it has no effect.

A Game Act or some protection is wanted badly, if not the few gaur and little game that is left will soon be exterminated. Every patel, in fact every gowda, has a gun, and the indiscriminate slaughter of game of all kinds is carried on by unscrupulous sportsmen.

An Act for the much-needed protection of wild birds is also necessary. All planters recognize the value of birds as insect-eaters, and natives as well as Europeans have noticed the scarcity of wild birds of late years. A tax levied on bird and other skins would help to fill the State Treasury.

W. M. D.

TERRACE DRAINAGE.

ON TEA, COFFEE, AND OTHER HILL PLANTATIONS.

SIR,—Having recently seen some tea and coffee estates in Southern India for the first time, I have been much struck by

the extraordinary system of planting and drainage that is adopted in nearly all of them, and as this system appears to me to be eminently calculated to denude the soil of its finer and really valuable particles, I daresay the following remarks will be of interest to the planters concerned.

The denuding action of water depends entirely on the velocity and body of water acting on the soil, and both of these are increased by the length and steepness of the course over which it has to travel. Moreover, as a very slight velocity and small body of water is sufficient to remove the finest slightest particles of matter in the soil, which alone are those that the roots of plants can assimilate and derive nourishment from, it is evident that in all places, and especially in those where the rainfall is heavy, every effort should be made to reduce the length and slope of the surface over which the water falling around the plants has to travel. But in the South Indian plantations (and, I am told, also in those of Ceylon) the plants are laid out in lines running straight up and down the hill slopes, which are very steep; and horizontal or gently falling drains are cut across these lines at intervals varying from 40 to 200 or more feet, themselves discharging into other main up and down drains. The surface water is thus carried down for lengths of forty or more feet between each two rows of plants at the steepest possible slope that can be provided for it, until it reaches the horizontal or cross drain, where its velocity has suddenly to be reduced to the much smaller velocity produced by the slight fall of the latter. The evil and direct consequences of this are: first, that owing to the steepness of the slope, the water has but little time to soak into subsoil, and so a much larger proportion of it runs down the surface, thereby increasing the body and greatly accelerating the velocity of the drainage water, and thus considerably augmenting its power of scouring out and washing away the fine particles of soil around the roots of the plants on either side. Second, the sudden reduction in the velocity of the drainage water, thus heavily silt laden, on its reaching the horizontal cross drain, immediately causes a deposition of silt in the drain, and so necessitates the labour and cost of periodically clearing it out. This, added to the original cost of cutting these drains and to the loss of the fine and valuable particles of soil, must annually amount to a considerable sum. Moreover, there does not appear to be the least necessity for this heavy loss and expenditure, for in Darjeeling, where the writer was some ten years ago, the rainfall is just as heavy and the hill slopes are quite as steep as they are in Southern India, and yet he cannot recollect having ever seen a single drain in any of the numerous tea estates that are there. Yet the plants there, instead of having to struggle for existence amongst bare gravel and stones, as can be seen especially in the lower portions of the up and down lines, in Southern India, are always embedded in the finest alluvium and consequently flourish and yield rich produce. The reason for this great difference is that in Darjeeling the plants are always laid out in horizontal lines following contours round the hill sides, and that the surface slope of the soil around the plants is reduced to a minimum by the system of "terracing" or cutting benches for each row of them. These benches are of a uniform breadth of about four feet (just sufficient for one plant) and vary in depth with the steepness of the ground from one to three or more feet. The upper surface of each bench is made with, and naturally retains, a slight outward slope. The great advantages of this system will be evident from what has been said at the commencement of these remarks about the evils of long and steep slopes for the flow of drainage water. The almost horizontal upper surface of each bench gives the water plenty of time to soak into the subsoil and draw down the fine matter to the root of the plants, and also reduces the velocity of the small proportion which flows off to a minimum. At the same time the short length of travel (four feet) which the water has across the width

of each bench reduces the body of the water flowing over it and the uniform, though slight, outer slope of the benches prevents any concentration of the water, so that drains are not where necessary. Thus not only is all scouring action reduced to a minimum, but each bench is converted into an area of deposit for whatever silt may be washed down, (chiefly from the vertical face of the upper bench,) and as each bench receives from the upper one as much as it gives to the lower, there is practically no loss of fine alluvium, even during the heaviest rain. In fact it may be said that the benching system checks denudation as completely as the South Indian system promotes it. Why the former has not been generally adopted is inexplicable for the first cost of benching, wherever there is any depth of soil suitable for cultivation, is considerably less even in the steepest ground than that of cutting and maintaining the South Indian system of drains for a period of three years, assuming that the latter are cut at every 40 feet, are 2 feet by 1 foot in section and are cleared of about twice their volume of silt in each year. And this without taking into consideration any of the indirect advantage in the shape of quicker and better growing plants and richer produce, etc. It is therefore to be hoped that the benching system will speedily be introduced into Southern India, especially as it can be in most cases adjusted to the existing positions of the plants, without in any way interfering with their roots or growth.

H. W. P.

PEERMADE, }
2nd December 1897. }

[Much of interest is contained in the above, but our correspondent must remember that terracing is no new thing in South India, and is only discarded because of its expense. If "H. W. P." can but prove by means of detailed comparative estimates of the two works, i.e. terracing *vs.* ordinary planting, that the former is as cheap as the other, he will be the means of conferring a great boon on South Indian planters. As a minor (!) detail has it struck "H. W. P." that the depth of Darjeeling and S. Indian soils varies rather considerably?—Ed.]

COFFEE.

Pithecolobium polycephalum.

This new shade-tree is included in the list, published elsewhere, of plants available to the members of the Madras Agri-Horticultural Society.

The branch fungus.

Mr. E. V. Carey, the well-known Selangor planter, writes to a Borneo contemporary regarding this pest: "It certainly attacks the finest trees, *e.g.*, the trees richest in foliage, but it is equally bad on both dry and dampish ground, and moreover infection spreads not only from branch to branch of the affected tree itself, but, if not carefully watched, to adjacent trees for a very considerable area in the vicinity. I look upon it as one of the worst enemies we have, its only redeeming feature being that it never affects the matured stem and, consequently, it is possible by allowing a sucker to grow from a point below its ravages to re-build the tree. I have tried treating it with applications and emulsions of various sorts, but without much apparent effect; the only thing seems to remove and burn all tainted branches."

The hawkmoth pests.

The same writer also gives some notes on the bee hawkmoth caterpillar, which, with the branch fungus above alluded to, he considers the two worst enemies of coffee in Selangor. This caterpillar spins its cocoon in the leaves of the coffee

in Borneo, but in Selangor it retires to the ground and spins a very small web for its cocoon an inch or two below the surface. It can be easily removed from thence by digging round the root of the tree.

The report of the heavy fall that took place at the Dutch sale has had a depressing effect upon the market here, says the *P. M. Review* of 20th November, although the actual decline of 9½ cents cannot be said to have taken place in a day. As it is the custom in Holland to value their sales by the previous one, which was held on October 12th, the fall represents the decline that has been going on during the last five weeks. In addition to this an estimate of 10½ million bags for the next Brazil crop was issued on Wednesday, causing a further fall in the terminal market, and entirely checking the steady buying which had been going on for some days, and had brought about an advance of 1s. Such estimates are really valueless, as the trees are only in flower, but it has had the effect of again bringing prices down to the lowest previously recorded. The auctions have been small, and have only consisted of undesirable qualities, very few of which were disposed of, while privately little has been done, although there is still some demand for fine qualities.

OFFICIAL STATISTICS OF THE COFFEE TRADE OF THE UNITED KINGDOM.

	1 Month ended Oct. 31.			10 Months ended Oct. 31.		
	1895	1896	1897	1895	1896	1897
Imports	31,582	54,878	59,678	694,003	631,658	681,076
Home Consumption.	22,683	22,618	21,712	210,916	207,880	208,167
Exports	34,973	36,695	47,970	383,024	397,268	394,408
Total Deliveries	57,656	59,313	69,682	593,940	605,148	602,575
Stock on Oct. 31	177,277	160,816	231,705	...	...	...

Yca cotton shade. There is no lack of novel departures in the young irrigated coffee industry in and round Bangalore. From the unusually interesting proceedings of the Madras Agri-Horticultural Society, we reproduce the following:—

Yca Cotton.—Mr. Hamilton Holmes, in his letter dated 14th August, asks if we can get for him from Peru 5lb. of each of Yca and Pinra cotton seeds. The Pinra variety is known as "Algodon de Pinra:" they are both perennial and thrive in a hot and dry country.

Read the following from a letter from Mr. H. Holmes, dated 5th September, 1897:—

"I herewith as promised enclose a few seeds of Yca valley cotton seed originally imported with the cinchona plants by C. Markham from Peru

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contain per ton:—

61.50	lbs.	Nitrogen.
57.38	"	Potash.
14.92	"	Lime.
13.68	"	Phosphoric Acid.

Seed cured under Messrs. Sutton and Sons' advice.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs.6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE,
Shencottah.

in 1867, particulars of which you will find in the Government Farm Reports, Madras, of 1873, and subsequently and probably previous to this, but I have none previous to refer to. I know a tree of this variety which produced 1,200 bolls in one year, about 120 bolls or so to the pound, i.e., cotton and seed. If you plant these seeds 12 feet apart in rich well drained land, red soil for preference, you ought to have plenty of seed in about six or seven months time. Manure well. I am planting between every coffee plants 6' x 6' for shade for the young plants. Make your pits 18" or 2' deep, 12" diameter, round and put one seed in each."

Coffea stenophylla. In reply to enquiries *re Coffea stenophylla*, distributed by the Madras Agri-Horticultural Society in 1890, the following letters have come to hand:—

Mr. T. J. Ferguson of Calicut, in his letter, dated 7th September, 1897, says that "the tree I kept here grows well and is topped at six feet, and is perfectly healthy: it had a fine blossom in May, but nearly all has failed to set and there is scarcely any fruit on the tree. However, this is a very general complaint this year, and my hybrid coffee trees are bearing very badly. He further informs us that a Mr. R. Lamb, Wynaad, writes to him as follows regarding the *C. stenophylla* which I gave him: Mr. Lamb says I am sorry to have to report that *stenophyllas* have as yet shown only about half a dozen flowers which have come to nothing, though the growth of the trees and freedom from disease is very satisfactory. Wynaad is probably too high for this coffee: it might succeed at 200 or 300 feet. I will try this when I get some seeds."

Under date 26th August, 1897, Mr. W. E. Gilbert of Yercaud states: "In reply to yours *re the four Coffea stenophylla* plants you kindly sent me three years ago, I carefully planted them in large pits filled with good soil with forest loam and cattle manure. They have been highly cultivated and greatly cared for in every respect. They never had leaf disease, and although they always look very healthy, yet their growth is extremely slow, for you will be surprised when I tell you they are not more than sixteen inches high: perhaps they require a higher or much lower elevation than Yercaud to suit them. This is about 4,300 feet above sea-level. I am sending you a couple of twigs of my plants from which you will easily observe how they differ in size and shape from the foliage of the 'arabica'; as for crop, my plants never had a bud on them, and it is not likely they will blossom even next season."

Of the few plants we distributed ourselves in the neighbourhood of Coonoor, the only one that is thriving at all is at Burliar. The growth of the others was, up to the period of their death, extremely slow. Without doubt this variety will never do high elevations. Judging by its immunity from leaf disease, it is possible that hybrids or grafts might be of service.

TEA.

High elevation tea. It is a noteworthy fact that Sir John Muir's Company (which expects to turn out some 30 to 40 million pounds a few years hence from its Indian and Ceylon estates) is just at present confining its efforts at tea-extension in Travancore to land of an elevation from 1,500 to 6,000 feet. Lower than this is left untouched, in view of the vast amount of such land still unplanted in India and Ceylon.

Doctors on tea.

"Well, if you must drink tea, avoid the strong Indian and Ceylon kinds, and drink good China, which is not so strong." So say many of the worthy medical profession. But what do they base their convictions upon? If on the relative quantities of tannin, why, a shorter infusion would effect the purpose they desire. Theine is relatively the same in all three kinds. The commonsense of the argument will

rather increase the use of tea than diminish it, which a contemporary half thinks probable.

Best jats for high districts. To answer this question, which is so frequently asked, the particular market for which the tea is destined must be first ascertained. If for the local Indian or packet trade, a good class hybrid is undoubtedly the most profitable, being a very free flusher and of a hardier nature than indigenous. For the London market, on the other hand, we cannot think that there can be two sides to the question: tea made from hybrid leaf will never yield the same quality in the cup as that made from indigenous. Yet in poor soil it might perhaps be wise to replace old vacancies in high jat fields with sturdy hybrid plants.

Rogivue, limited. The alleged crimping of Mr. Rogivue, the well-known exponent of the merits of Ceylon tea in Russia, by the "terrible" Sir John Muir, is causing a great deal of excitement in the Island. Mr. Rogivue, it may be mentioned, was subsidised by the Ceylon Planters to push Ceylon teas in Russia. But this gentleman thought he could build up a far larger business with the aid of a larger capital. Coming to Sir John Muir's ears, the tea king promptly formed a Company with a capital of £70,000, with Mr. Rogivue as Managing Director. The objects of the Company are to push Ceylon teas as before, but also to devote considerable attention to Indian teas too. We don't quite understand why Ceylon feels so very sore about the matter, seeing that Sir John Muir's Plantation Company has some 17,000 acres of tea in the Island. Consequently Ceylon interests will be by no means neglected.

Fuel or tea? On favoured gardens which enjoy access to unlimited supplies of moderately priced fuel, it is not altogether an easy matter to decide whether it would be more advantageous to plant up some of the reserve land in fuel, or else in tea. The question of course resolves itself into the annual profit derivable from each per acre, which is not so easy to decide as one might think. For, granted that a hundred cubic feet of bought fuel cost so many rupees, the annual yield per acre of fuel must be ascertained (dating, say, from the fifth year). The calculations required to arrive at a conclusion between the comparative value of tea and fuel are somewhat intricate, and accurate data regarding the yield of fuel per acre are most desirable. At first sight it would appear that having one's own fuel plantations attached to the estate would be the first thought of all prudent proprietors. On the other hand, it is just as obvious that tea pays better than fuel. Naturally, wherever possible, a large proportion of the fuel trees required could be planted along roads, on extra poor ridges, and thinly interspersed among the tea itself. Care must be naturally exercised that the trees so used are not directly harmful, at least to the plants among which they would grow.

Remunerative fuel plantations. Touching again on the subject of fuel plantations, the careful planter should keep his eye wide open as to the possible alternative or subsidiary value of the trees planted for fuel. Some trees are good only for fuel, such as blue-gums. These grow very fast, it is true,

but have practically no value (supplying rough timber for coolie lines excepted) beyond their high heating qualities. Black wattle (*Acacia decurrens*) grows nearly as fast as gums, give a decidedly better timber, and contains in its bark a large amount of that tannic acid so useful in the tanning trade. *Acacia melanoxylon* is a slower grower than either, but gives a superior timber. Lastly, among imported trees, comes the little-known *Acacia mollissima* which possesses much the same habits of growth as the yellow water (*Acacia dealbata*), and affords the most valuable tanning bark of its species. Coppiced every three or four years, it gives a large quantity of fuel and bark. Decidedly a valuable and remunerative fuel-tree this, as is proved by the existence of the numerous "wattle-farms" in Natal. The Madras or Nilgiri Agricultural Societies would do well to indent for a supply of the seed from Australia for distribution to their members.

The Market. **INDIANS.**—The quantity brought forward has been smaller compared with the previous week (*P. M. Review* of 20th November), viz., 46,675 packages against 57,100, and although the demand shows improvement, the market generally has been less firm. The lower descriptions continue in good supply, and are more readily obtainable at a slight reduction in values, but the lower quotations are mainly attributable to the undesirable character of many of the teas. Parcels giving a useful infusion are, however, well competed for, fetch prices quite on a par with those ruling in previous sales, and will no doubt continue to be freely bought at the comparatively easy rates prevailing. The medium grades have also been in liberal supply, and although the bidding has not been so brisk, due probably to the fairly good stocks held by the trade, there is no material change in prices. This falling off in the demand for these kinds is but temporary, and in a great measure occasioned by the attention of the retailers being concentrated on the purchase of other goods for their Christmas trade. The finer descriptions are not so plentifully brought forward, but as there is sufficient to meet the prevailing demand, values are, on the whole, steady, excepting for the poor liquoring sorts, which are easier. At the public sales 46,675 packages were offered and 5,820 withdrawn, while the quantities catalogued for next week promise to be on a much smaller scale.

CEYLONS.—The quantity brought forward at public auction, although still small, was rather larger than has been the case of late. Prices generally were well maintained, the only sign of any decline being in Whole Leaf Teas below 7½d., and in these a weaker tendency was certainly noticeable. This weakness can, however, only be of a temporary nature, owing to the very limited supply coming forward, the sales advertised for next week only amounting to about 10,000 packages, which is abnormally small. All other grades were firm, and the quality of the teas has been about equal to late offerings. At the public auctions about 20,640 packages were brought forward, of which about 2,500 were withdrawn.

Some interesting information on **Brick Tea Trade in Tibet.** this branch of Tibetan Trade is given in the *H. & C. Mail*. Yatung is the town on the Tibetan side of the Jalep Pass, between

Sikkim and Tibet, which was opened to Indian trade by a recent convention with China. A branch of the Chinese Maritime Customs has been established there, and the report on the trade of the place for the past year is interesting reading. It is published in the Yellow-book of the Chinese Customs. At one time there was a considerable traffic between Tibet and Sikkim in brick tea; but no sooner was Yatung declared an open mart, and the question of introducing Indian tea across the frontier mooted, than the passage of Chinese brick tea into Sikkim was prohibited by the Tibetans for some inexplicable reason. Reduced supplies still reach Kalimpong and Darjeeling through Nipal and by other routes. Four kinds of brick tea are still to be purchased in the Chumbi valley at prices which are moderate when it is remembered that the tea has to be carried on pack animals ninety days' journey from the producing districts in Szu-chuan. The lowest quality, which is the tea of the masses in Tibet, is described as veritable rubbish. "Tea flavour it has none, and on careful boiling and examination a brick is proved to consist of mouldy leaves, many of them 4 in. long and longer, twigs, sticks 2 in., 3 in. or 4 in. in length, and some of them as thick as a slate pencil; sundry hard lumps of decayed leaves which barely separate when boiled, and, in addition, sweepings, dust, and various dirt. As is well known, the Tibetan system is to positively boil tea leaves; in fact, to make soup of them, and to add salt and butter, or mutton fat, or cheese, just as the decoction reaches boiling point. Thus it is rendered palatable, grateful, and comforting to the native. So far as this quality brick tea is concerned, it may be safely asserted that to European tastes equally pleasant tea could be made from a spadeful of good leaf mould dug from under an old oak, and, if prepared in their own peculiar style, it is doubtful if the Tibetan peasantry would notice any difference in the brew." It seems that during last year 6,444 Tibetans and Tomos, chiefly the latter, crossed the Jalep into the Chumbi valley under passports, and 6,268 went to India from the valley.

ROUND THE BUNGALOW.

NOTES BY "A PLANTER'S WIFE."

Good things for Christmas. I intend to devote my space this week to instructions for making nice Christmas dishes. Many of my readers may have the recipes I gave last year, but I have been told that many of them were too rich and expensive, especially in these times of poor crops; so I will give recipes this time which, though very nice, are not too expensive for most pockets.

Cheap plum pudding. Take half a pound each of shred suet and fine flour, a quarter of a pound of carefully-washed currants, and stoned raisins, a tea-spoonful of spice, a little lemon-peel grated, a dessert-spoonful of sugar, two eggs and enough milk to make it into a stiff batter. Tie it in a cloth, and boil for two hours. Serve with sweet sauce.

Advertisers are notified to send all advertisement matter and answers to advertisements direct to Manager, this paper, 3, Esplanade Row, Madras.

Correspondence and matter for publication to be sent to Editor, this paper, Coonoor.

Christmas pudding.

One pound chopped beef suet, one pound of stoned raisins, one pound of washed currants, half a pound of bread-crumbs, a quarter of a pound of sugar, half an ounce of mixed spice, a quarter of a pound of candied peel, a gill of brandy, a gill of cream or new milk, four eggs well beaten. Mix thoroughly and boil in a cloth for four hours, or in a mould for six hours. Serve with wine sauce or burnt brandy.

Sauce au vin.

Pour half a pint of wine upon the yolks of three eggs; beat together for ten minutes; add sugar, grated lemon-peel, and cinnamon to your taste. Warm it, but do not let it come to a boil.

Burnt brandy.

Put four large lumps of loaf-sugar into a saucer with a gill of pale brandy; set fire to the sugar, and directly it is dissolved, serve it over the dish intended.

Mince meat.

One pound of beef-suet, one pound of currants washed very clean in two or three waters and dried before the fire, a pound of raisins stoned and cut up, a pound of sultana raisins, a quarter of a pound of candied-peel, two pounds of minced apples, one pound of moist sugar, the juice of two lemons, and their rinds pared off as thin as possible and shred small, a quarter of an ounce of mixed spice, and a gill of brandy.

Peach cream.

Steep half an ounce of isinglass in half a pint of cream, and stir over the fire until dissolved. When almost cold, mix with it the strained juice from a tin of peaches and the juice of a lime. Pour three parts of this cream into a glass dish, and allow it to set. Colour the convex sides of the halves of peaches delicately with cochineal. Place them with the coloured sides upwards upon the set cream. Pour the remainder of the cream carefully between the fruit. Allow this also to set, and the dish will be ready to serve. Three-quarters of a pint of blancmange, with the yolks of three eggs stirred to it while scalding hot, make a fair substitute for the cream.

Tinned fruits.

Tinned fruits are most useful and cheap in preparing dishes for the table, especially on great occasions like Christmas, and we must remember there are three senses to be gratified,—the sense of smell, the sense of taste, and the sense of vision. With a little ordinary care and thought many pretty dishes may be prepared from very ordinary and wholesome puddings which would delight and at the same time be very suitable for children. For instance, suppose we have an ordinary custard pudding usually served in the pie-dish in which it was baked, we would allow this pudding to get cold, then with a sharp knife cut around the edges and turn it out like a jelly on to a glass dish. Now make a star, and ornament the middle of the pudding with a preserved cherry and four little points or wedges of angelica about an inch long, half an inch at the base, coming to a point. Then place round the edge of the pudding at distances about an inch apart half a cherry and a little star of angelica. Instead of having a common-looking pudding, you have a dish which in appearance would be fit to place on any table.

Tinned pears.

On opening the tin these will be found to consist of very ripe and luscious pears peeled, cut in half, the cores having been removed, and surrounded by a very delicious pear syrup. These pears seem to melt in the mouth, and are probably more wholesome in hot climates than stone fruit. First of all open the tin, and the first thing that will strike you is how to make them look pretty? They are pale in colour like wax. Drain the pears from the syrup till they get almost dry. Next have ready some good rice that has been boiled till it is very tender, but not pappy. Pile up this cold rice in an oval-shaped glass dish, and then pour the syrup of the pears over the rice and let it soak. The syrup can be poured into the middle of the rice, as the surface should be as white as possible. Now take a few drops of cochineal, and with an ordinary pastebush or any other kind of brush paint the pears a bright red. It is wonderful what an improvement this will make in their appearance. Shortly before sending the dish to table place the pears reposing on the piled-up rice. The red pears reposing on the white bed look very pretty and a little chopped angelica will assist to brighten up the plain white surface.

Pear jelly.

Another method of serving pears is to make the juice into pear jelly. All that is necessary is a little gelatine to make the juice a jelly. The jelly will not be bright unless it is cleared in the ordinary way with the white of an egg, but there is no harm in having the jelly clouded. The jelly

can be allowed to set in a very small pie dish, and turned out into the middle of a glass dish. The red pears can now be placed round it, and the pears themselves can be ornamented by being stuck with little strips of almond like a tipsy cake. If the pears rest on the jelly with the stalk part or the smaller end uppermost, the dish would look prettier if you stick all the base with strips of almond, and use strips of angelica for the upper part only about an inch from the end. We have here green, red and white, which always contrast well so far as colour goes.

Greengages mould-
ed. Take one bottle or tin of greengages, a quarter of a pound of sugar, one ounce of gelatine. Soak the gelatine in a very little water, pour the liquor from the greengages into a stewpan, add the sugar and boil gently for a few minutes; stone the greengages, and add them to the syrup, and simmer for five minutes; then put in the gelatine and mix it thoroughly with the other ingredients; pour into a wetted mould. When firm turn it out and serve with whipped cream or a boiled custard. If tinned greengages in syrup are used, little or no sugar need be used in preparing this dish.

Blancmange with raspberries.

Required one tin of raspberries, two table-spoonfuls of cornflour, one pint of milk, two ounces of sugar, a little essence of lemon. Mix the cornflour very smoothly with the milk, add the sugar, and boil for ten minutes, stirring constantly. If too stiff add more milk. When cooked, mix in the lemon essence and pour it into a wetted border mould. When firm, turn on to a glass dish and heap the raspberries in the centre.

Table jellies.

Jellies always make acceptable dishes, and I can thoroughly recommend Chas. Southwell and Co's "Excelsior" Table Jellies, and they are very simple to use. Directions for use: Place the jelly tablet in a pint measure and fill up with hot water, turn into a larger vessel and stir occasionally till thoroughly melted, then pour into a mould and stand it in a cool place. A few hours are necessary to set the jelly. **NOTE.**—When firmly set, the jelly is easily turned out by dipping the mould for a second or two into warm water. A very little heat is sufficient to loosen the jelly from the mould. In hot climates I would advise a little less water than given in the above directions.

THEN DON'T WATCH THE POT.

A WATCHED pot never boils, and a watched clock never goes. Nothing is quick enough for impatience. Minutes, hours, and days are mere words after all. We are happy—a day is but an hour. We are miserable—an hour is a day.

From the summer of 1890 to the autumn of 1892 wasn't long to contented and busy people; but to Mrs. Annie Dutton it seemed like one of those tremendous geologic periods that the learned men talk about. For it was measured by weary heart-beats and footsteps taken in pain. Her trouble began as it begins with an uncounted multitude of women—the tired and languid feeling, the disgust with food, the distress after eating, the coated tongue, the grinding pain at the pit of the stomach, the nausea and vomiting of acid fluids, &c.—a dreary list.

Writing of her experience recently, she says: "After a time I had so much distress that I never wanted anything to eat; the very sight of it made me sick. Night after night came, bringing sleep to others, but not to me. I was low, miserable, and worn out, and would sit for hours all alone, wishing for no company. And, then, so nervous. Why, the slightest noise startled me.

"Two terrible years of this I was dragged through. In that time I lost four stone in weight, growing continually weaker. I consulted doctor after doctor, but they were not able to do me any real good. I tried change of air, yet was disappointed in my hope of any advantage from it. I only lost ground, and became more and more feeble.

"Then came unexpected help. In September, 1892, a neighbour of mine told me of the good Mother Seigel's Curative Syrup had done her, and urged me to try it. I had heard this medicine well

spoken of for years; still I had no faith that it would benefit me in my condition. However, my husband got me the Syrup from Derby, and after I had taken it a few days I felt better. I could eat once more, and my food agreed with me. After I had used three bottles I was a new woman. *I was well*; and I have been in good health ever since. Now I recommend the Syrup to all our customers and friends, and so does my husband.—Yours truly, (Signed) Annie Dutton, Nottingham Road, Borrowash, near Derby, October 6th, 1893."

As to the opening symptoms, the narrative of Mrs. Susannah Durose is identical with that of Mrs. Dutton, so we need not repeat them.

"In October, 1890," says Mrs. Durose, "I read about Mother Seigel's Syrup in a little book. I got a bottle, and after taking it a short time I was well as ever, although *I am 78 years old*. My daughter, who suffered from weakness and neuralgia, took the Syrup with great benefit. I know many others who have been cured by it after all other means had failed.—Yours truly, (Signed) Susannah Durose, Hawthorn Cottage, Borrowash, near Derby, October 6th, 1893."

The latter lady would be called very old, as she is 78; and, as lives average nowadays, she *is* old. Few of us, perhaps none, have any hope of living as long as she has. Why not? "The days of our years are three score years and ten," says David. But most of the race fail to reach 70, while many exceed it. There is no law, no edict on the subject. We are each entitled to live as long as we can, and to be as happy as we can; and both depend (accidents excepted) on health; and health means the continued natural action of the digestive process.

And that Mother Seigel's Curative Syrup promotes *that* a host of witnesses in England alone have testified.

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The Wynaad and the Planting Industry of Southern India, by FRANCIS FORD, Re. 1.

The Planting Directory of South India, Re. 1-8.

Tea Planting from Seed to Cup in Tamil, with English Translation. Re. 1.

Sketch History of the Planting History of Wynaad, by the late ADOLPHUS ARTHUR WRIGHT. Re. 1-8.

Science and Coffee, by the late MR. WM. PRINGLE, M.S.C.I., Re. 1-8.

Report of Observations of Injurious Insects and common Crop Pests during the year 1883, with methods of Prevention and Remedy by Miss ELEANOR A. ORMEROD, F.R.Met.Soc., &c., Re. 1-8.

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MARKET SUPPLEMENT.

SATURDAY, DECEMBER 18, 1897.

COFFEE.

Messrs. R. J. Rouse & Co.'s Weekly Coffee Report (November 26, 1897) says:—Owing to the thick fogs prevailing no auctions were held on Tuesday and Wednesday, but the small supplies brought forward yesterday met a poor demand and only a very limited quantity was sold.

No East India was catalogued.

A further reduction of 1/- to 2/- had to be accepted for the small proportion of Columbian disposed of, the rest being bought in.

There was a heavy decline in futures during the first part of the week, quotations giving way 2/- to 2/3; the last two days however the market has recovered sharply on firmer cost and freight offers and smaller Brazilian receipts, prices closing 3d. dearer than our last and 2/6 up from the lowest.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending November 24th, 1897, says:—Bank rate 3^o/_o. Bombay Exchange closes at 1s 3¹/₂d. Brazil Exchange 6¹/₂d. Rupee paper 3¹/₂ 62¹/₂. Silver 27¹/₂d per oz.

This market continues depressed, and there is no disposition to buy. Prices are more or less nominal, and in some cases fully 5s per cwt. lower. At the close the tone is slightly firmer. Brazil markets are again very flat.

Futures continued flat until yesterday when a reaction took place. The closing shews a fall of 1s 6d on previous quotations, being 1s above the lowest, viz.:—Good average Santos in Havre, March delivery, fcs. 34.75, in Hamburg pf. 28, and No. 7 low ordinary Rio in New York \$5.45.

To-day's London official quotations are:—

	Dec. 27/-	March 28/-	May 28/3	July 28/6	Sept. 29/9
SANTOS	...	...	...	...	...
We quote:—					
Ceylon, mid. to good mid.	95/ @100/	Costa Rica, mid. to fine...	77/ @108/		
Do. small to low mid.	75/ „ 93/	Do. ord. to low middling.	54/ „ 76/		
East India, mid. to good		Jamaica, good to fine ord.	49/ „ 60/		
mid .. 86/ „ 97/		Do. greenish to fine			
Do. small to low mid.	68/ „ 85/	colory... 70/ „ 125/			
Guatemala, mid. to fine...	75/ „ 100/	African ... 27/ „ 28/			
Do. good ord. to low		Columbian, ordinary ...	35/ „ 43/		
mid... 55/ „ 74/		Do. good ord. to			
Salvador, good ord. foxy		low mid... 45/ „ 70/			
greenish... 50/ „ 51/		Do. mid. to fine... 72/ „ 96/			

Receipts in Brazil to 23rd Nov. compare as follows with previous years:—

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
RIO	2,265,000	1,784,000	1,258,000
SANTOS	3,865,000	3,014,000	1,977,000
	6,130,000	4,798,000	3,235,000

Auctions:—

543 bags Costa Rica, part sold	...	...	@ 52/6	@ 53/
2,301 bags Columbian, small part sold	...	...	67/	86/6
1,169 bags Nyassaland, chiefly sold	...	...	36/	89/6
65 barrels Jamaica bought in.	...	...		

278 bags Vera Paz, small part sold ... @ 45/ @ 72/
243 bags Guayaquil bought in.
21 packages Mocha bought in.

Landed last week ...468 tons. Deliveries ...578 tons. Stock ...10,038 tons.
Do. last year ...535 „ „ „564 „ „ „7,929 „

TEA.

Messrs. Gow, Wilson and Stanton's Indian, Ceylon, and Java Tea Report, dated November 26th, 1897, says:—

QUANTITY BROUGHT TO AUCTION IN LONDON FROM 1ST JUNE TO DATE.

	Indian.	Ceylon.	Java.
1897-1898...	762,654 packages.	606,715 packages.	21,378 packages.
1896-1897...	786,737 „	558,332 „	21,764 „
34,428 pkgs. INDIAN	} Total 46,707 packages were offered in public auction this week.		
10,634 „ CEYLON			
1,645 „ JAVA			

Export from Ceylon direct to countries outside the U. K. from 1st Jan. to 30th Sept., 1897, was 11,911,213 lbs., against 10,053,323 lbs. in the same period of 1896, 8,813,641 lbs. in 1895. The bulk of this was sent to Australia, where the use of Ceylon Tea steadily increases. The quantity taken by China also shows an increase; doubtless for North America, while that taken by India is probably for the Persian Gulf. The figures for Russia look small, but almost all the demand is supplied from London.

Distribution of Tea exports from Ceylon from 1st Jan. to end of Sept.

	1897.	1896.	1895.	1894.
United Kingdom	75,302,106	69,442,510	65,857,110	58,900,218
Austria	14,360	29,454	2,573	4,296
Belgium	9,470	30,695	8,113	951
France	59,403	44,792	31,697	10,970
Germany	189,503	75,721	176,738	121,431
Holland	15,305	3,889	10,781	100
Italy	5,071	7,257	5,473	1,297
Russia	324,612	224,012	206,895	33,328
Spain	21,570	39,010	42,275	32,713
Sweden	35,123	4,925	750	—
Turkey	7,280	14,905	7,367	5,930
India	729,793	693,332	636,869	777,063
Australia	6,205,561	7,891,692	6,867,390	5,583,175
America	569,708	439,216	297,343	160,721
Africa	174,685	75,386	90,726	50,711
China	469,468	218,652	235,601	108,422
Singapore	22,601	55,545	23,752	14,261
Mauritius	11,790	91,790	109,703	71,518
Malta	45,910	113,050	59,595	29,280
Total lbs.	87,213,319	79,495,833	74,670,751	65,906,385

Indian. The sale was small, consisting of only 34,428 pkgs.; this resulted in a very steady market for all descriptions, Teas with special point in quality meeting with strong competition. There is not much change to note in regard to quality, which continues on the whole fairly satisfactory.

SUPPLEMENT TO "PLANTING OPINION."

Week's av. of Tea sold on Garden Account, 1897, 25,769 pkgs.,
av. 8'89d. 1896, 34,030 pkgs., av. 8'4d.

	1897.	1896.	1st June to date 1897.	1st June to date 1896.
	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.	Pkgs. Price.
Assam	12,814 p 10	18,103 p 8 $\frac{3}{4}$	260,844 p 10 $\frac{1}{2}$	260,722 p 10 $\frac{1}{2}$
Cachar and Sylhet.	8,433 p 7 $\frac{3}{4}$	9,088 p 7 $\frac{3}{4}$	140,538 p 7	131,662 p 7 $\frac{1}{2}$
Chittagong	146 p 7	151 p 8 $\frac{1}{4}$	3,569 p 7 $\frac{1}{4}$	1,794 p 7 $\frac{1}{4}$
Chota Nagpore	—	—	804 p 4 $\frac{3}{4}$	1,002 p 4 $\frac{3}{4}$
Darjeeling	1,564 p 11 $\frac{1}{4}$	1,409 p 11 $\frac{1}{4}$	41,892 p 11 $\frac{1}{4}$	40,411 p 11 $\frac{1}{4}$
Dooars	2,099 p 7 $\frac{3}{4}$	3,985 p 7 $\frac{1}{4}$	61,699 p 7 $\frac{1}{4}$	71,225 p 7 $\frac{1}{2}$
Kangra, &c.	157 p 6 $\frac{1}{4}$	337 p 7 $\frac{1}{4}$	4,782 p 7 $\frac{1}{4}$	3,373 p 7
Neilgherry	111 p 10 $\frac{1}{2}$	—	3,877 p 7	1,622 p 7
Terai	366 p 7 $\frac{3}{4}$	828 p 6 $\frac{3}{4}$	14,268 p 7 $\frac{1}{4}$	8,259 p 7
Travancore	79 p 5 $\frac{1}{4}$	129 p 6 $\frac{1}{2}$	17,372 p 6 $\frac{1}{2}$	13,158 p 7

Total sold on Garden Account 1st June to date 1897, 549,645 pkgs.,
av. 9'07d. 1896, 533,228 pkgs., av. 9'25d.

Comparative prices of Indian Tea in London:—

	1897.	1896.	1895.	1894.
DUST. (Fair ordinary, dark liquor)	3 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d
FANNINGS. (Red to brown, strong rough liquor)	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d	4 $\frac{1}{2}$ d	5d
BROKEN TEA. (Brownish to blackish, strong liquor)	6 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d	6d	7d
PEK. SOUG. (Blackish greyish, useful liquor).	6 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d	7 $\frac{1}{2}$ d
PEKOE. (Greyish to blackish, some tip, useful liquor)	7 $\frac{1}{2}$ d	7 $\frac{1}{2}$ d	7 $\frac{1}{2}$ d	8 $\frac{1}{2}$ d
PEK. SOUG. (Blackish greyish, inferior liquor).	5d	5d	5 $\frac{1}{2}$ d	6d
PEKOE. (Blackish greyish, some tip, inferior liquor)	5 $\frac{1}{2}$ d	5 $\frac{1}{2}$ d	5 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d

Ceylon. The very small auction met with good attention from buyers rates for all descriptions being fully maintained. Quality continues fairly satisfactory and shows no material alteration, although arrivals generally are not quite up to those of a few weeks back.

Average for week 8'50d., against rather over 8 $\frac{1}{2}$ d. same period last year.

Ceylon Tea sold on Garden Account 1st January to date 1897, 979,425 pkgs., av. 7'68d. 1896, 885,360 pkgs., av. 8'22d.

Comparative prices of Ceylon Tea in London:—

	1897.	1896.	1895.	1894.
PEKOE SOUG. (Ordinary leaf; fair liquor)	6 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d	7 $\frac{1}{2}$ d
PEKOE (Ordinary leaf, little twist; fair liquor)	7 $\frac{1}{2}$ d	7 $\frac{1}{2}$ d	7 $\frac{1}{2}$ d	9d
PEKOE SOUG. (Rather bold leaf; indifferent liquor)	5d	5d	5 $\frac{1}{2}$ d	6 $\frac{1}{2}$ d
PEKOE (Somewhat bold leaf; indifferent liquor)	5 $\frac{1}{2}$ d	5 $\frac{1}{2}$ d	6d	7d

Java. The selection comprised a somewhat varied assortment; last week's rates being generally maintained although a few parcels were withdrawn for higher prices. Invoices from "Perbawatee" and "Goalpara" realized an average of 11 $\frac{3}{4}$ d. and 10 $\frac{3}{4}$ d. respectively. Last week's average of "Goalpara Estate" should have been printed 11 $\frac{1}{2}$ d. not 104d.

Bank rate 3 per cent. Exchange on London three months sight.—
Calcutta 1/3 $\frac{1}{2}$, Colombo 1/3 $\frac{1}{2}$.

PUBLIC SALE OF SOUTH INDIAN TEA.

(AVERAGE FOR ALL INDIA 8'89d.) November 26th.

GARDEN.	Total.	Average.	Broken Org. Pek. or Flowery Pekoe.		Pekoe and Unassorted.		Broken Pekoe.		Pekoe Souchong.		Broken and Souchong.		Fannings, Dust, and Various.	
	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.	Quantity	Price.
Neilgherry	111 p	10 $\frac{1}{2}$												
Nilgiri Plant Glen...	91 p	10 $\frac{3}{4}$	50 b	1/1 $\frac{3}{4}$	18 $\frac{1}{2}$ c	9 $\frac{1}{4}$	6 $\frac{1}{2}$ c	1/2 $\frac{3}{4}$	...	...	17 $\frac{1}{2}$ c	6 $\frac{3}{4}$	...	...
Non Such	20	9 $\frac{1}{2}$	20	†9 $\frac{1}{2}$	...	...	...	...	...	...	...	...	...	...
Travancore	79 p	5 $\frac{1}{2}$												
Riviera	48 p	5 $\frac{3}{4}$			27	5 $\frac{1}{2}$	15	7	2	4 $\frac{1}{4}$	...	...	4 $\frac{1}{2}$ c	2 $\frac{1}{2}$
Rockwood	31 $\frac{1}{2}$ c	4 $\frac{1}{2}$			20 $\frac{1}{2}$ c	5 $\frac{1}{2}$	...	...	...	...	...	...	11 $\frac{1}{4}$ c	2 $\frac{3}{4}$

† = withdrawn.

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Coffee Cured and Shipped to London on Planters' Account.

ADVANCES MADE ON CROPS ON MODERATE TERMS.

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Separate Manure Works have been recently erected, giving greater facilities for the Manufacture of Manures.

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Coimbatore and Coonoor.

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...	...	...	...	...	...
...	...	...	...	...	...
...	...	...	...	...	...

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2 do do ...	" 4	" 6	" 12 do
1 do do ...	" 2	" 4	" 7 do

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(This excludes extra postage where the weight of leaflets necessitates such.)

Advertisement charges are strictly payable in advance, except by w. approved customers.

PLANTING OPINION.

A WEEKLY JOURNAL

(WITH MARKET SUPPLEMENT)

WRITTEN BY PLANTERS FOR PLANTERS.

VOL. II.]

COONOR, SATURDAY, DECEMBER 25, 1897.

[No. 39.]

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SUBSCRIPTION.—Advance Rates: Yearly, Fifteen Rupees; Half-yearly, Eight Rupees; Quarterly, Five Rupees, and Monthly, Two Rupees, including postage. Single Copies, Eight Annas.

ADVERTISEMENTS.—From the 1st October, 1897, the charge for line advertisements will be: 4 as. per line for the first, 3 as. for the second, and 2 as. for the third and succeeding insertions. Five-line advertisements from Subscribers will be inserted for three issues for one rupee; non-Subscribers will be charged two rupees.

DOMESTIC OCCURRENCE.—The fee for inserting a domestic occurrence will be *One Rupee* for each insertion, payable in advance.

N.B.—Remittances should be sent to the Manager, "Planting Opinion," Esplanade Row, Madras.

IMPORTANT NOTICE.

The Business Offices of this paper having now been removed to Madras, all remittances should be made payable to the Manager of *Planting Opinion*, 3, Esplanade Row, Madras, who will also attend to all advertisements, &c.

Letters to the Editor should be addressed to Coonoor, as usual.

SEASON REPORTS.

NOTICE.

TO OUR SEASON REPORTERS.

Please post your next reports to reach Madras on Friday, the 7th January 1898.

S. E. Wynaad. DEVALA, 22nd December.—*Weather.*—Since my last report, for three days it was very cloudy, rainy and very windy and since very hot during the day and very cold at night. *Crops.*—Stripping is being continued Paddy harvest is in full swing. *Health.*—Fever, headache, cold and cough prevalent. *Labour.*—Sufficient.

Coorg. POLLI BETTA, 21st December.—*Weather.*—Not so cold as previously. The last rain that fell was on the 27th and 28th ultimo about 35 cents, out east about 45 cents; 17th to 19th instant inclusive were overcast, and some moisture was even precipitated, but not enough to measure. *Crops.*—Crop has ripened up very well since, and second picking in some cases is going on briskly. In some they have been finished. Crops will be short, but not so bad as last season. *Health.*—Fevers and coughs and some dysentery prevalent.

Nellampatty (British).

21st December.—*Weather.*—Since Wednesday of last week till this morning we have had cold cloudy days, and on Saturday and Sunday fell what is to be our Christmas rain I think, as it is quite clear now; no more signs of wet. I had only 60 cents altogether, and I think that is about the average. Strong land wind blowing. *Crops.*—Coffee coming in slowly. *Plant diseases.*—Leaf still in clearings; almost gone in old

coffee. *General Health.*—Good. *Labour.*—Plentiful. *Interesting Items.*—Service last Sunday was a great success and all were present (save two I think). The result of it all is that the powers that be think we want a cemetery badly and are subscribing to help us!

Nilgiris.

COONNOOR, 21st December.—On Friday last our Kismis malay began and on Sunday the driving rain, though extremely thin, wetted the ground appreciably. To-day, Tuesday, all rain has disappeared. Frost will put in an appearance very soon, as the temperature is falling rapidly, ranging from 50° to 62°F. in the shade. The hills are getting brown, and weeds dying down on all sides. Talking about weeding, some men delay post N. E. monsoon weeding till the April showers begin, declaring that any disturbance of the surface soil must result in loss of moisture. Shallow forking on the contrary, and weeding effects just the contrary. What says friend "Coorg" or "Mudigere"? Happy Xmas to them and all my other brother correspondents! The climate is simply superb at this time of the year. Taken all round, it adds 25% at least to the value of Nilgiri property. [That's enough, though this paper is edited on these Hills.—ED.]

OURSELVES.

THIS issue is of extra large size to make up for the omission of next week's number during the short Xmas holidays. The year's index, alphabetically arranged, will be distributed with the first number of January 1898.

We will not adopt the usual style of printing the more or less wearisome retrospects for the year. We can point, however, with great pleasure to the marked increase of activity in the organic body of the planting community. The fates have not smiled on the industry this year, falling prices for both our staples, a rising exchange, and with blight attacks of more intensive nature than heretofore, do not leave much room for hilarity. But as dangers and difficulties increase, so however do the courage and spirits of the community rise. With steadfast energy at their backs, planters may well face the coming year with composure. Let combination and true unanimity be their watchwords.

In conclusion, hearty Xmas wishes to one and all.

BONES AND OTHER PHOSPHATIC MANURES.

THE yearly increasing exports of bones from India has already drawn the anxious attention of the planting community, who have addressed Government on the subject. Their proposal, however, that an export duty should be imposed both in the interests of planters and the ryots themselves, has not met with success. It is interesting therefore to observe the great importance in which phosphatic manures are held in some of our colonies. With the progress of the great farming industry of the Cape and South Africa generally, the demand for crushed bones is rapidly outstripping the supply. For not only are phosphatic manures for supplying the phosphoric acid so needed

in the soil, but also in the form of crushed bones or bone meal to be fed to the live stock. There are many ailments incidental to farm stock in Africa who are deprived of their requisite phosphates usually so abundant in other countries in the forage plants the animals graze on.

The extreme poverty of African soils in phosphoric is shown in a striking manner by various analyses of soils. Many of the samples tested showed that they did not even contain per acre of 6" surface soil the phosphates contained in 1,200lbs. of bones. The average ran out, however, to double that quantity. In both cases the phosphates were of course in an insoluble condition, and therefore not available as plant food.

As a natural consequence Cape farmers are turning their attention to outside supplies, in the shape of East Indian bone meal, which has been selling in London as low as £4-5-0 per ton, mineral and other phosphates. It may be useful to give the comparative value of the various phosphatic manures, as set forth in the *Cape Agricultural Journal*:—

Ordinary bones	contain	...	48 per cent. of bone earth			
			(Tribasic phosphate).			
Corprolites raised						
in Cambridge	...	56	"	"	"	"
Phosphatic rocks						
from Estamadura						
in Spain	...	72	"	"	"	"
Sombrero in						
West Indies	...	71	"	"	"	"
Carolina, United						
States	...	52	"	"	"	"
Canadian Apatite	...	82	"	"	"	"

There is no difference in the manurial value of the phosphate unit in the above substances, though the nitrogen in the bones of course adds to its value. Mineral phosphates are at present exceedingly cheap in England, an article quoted in the *Mark Lane Express* guaranteeing 35 per cent. of soluble phosphate @ £2-10-0 per ton, nearly half the price of East Indian bone meal already quoted. The prices of superphosphates have been greatly reduced in the last few years, mainly owing to the cheaper production of sulphuric acid.

The great source of sulphur, as furnished to the commerce and manufactures of the world, was at one time the mines in Sicily. The King of Sicily, thinking that he could make the world pay, put on an export duty. The English oil of vitriol manufacturers were taught by the chemists to use iron pyrites instead of brimstone, and much to King Bomba's surprise he found they could do without his sulphur; and when the duty was taken off again, the manufacturers stuck to pyrites and they have been used ever since. There are immense quantities obtained from Wicklow in Ireland, and these contain more than half their weight of sulphur.

Besides the above-mentioned sources of phosphoric acid we have basic slag, and this, when of first-rate quality, is a good substitute for bones, and is found more available for the use of the plants when ground to an exceedingly fine powder. This article is quoted in the *Mark Lane Express* at £1-13-6 per ton, bags included, guaranteed to contain 38 to 45 per cent. of phosphate of lime. This is an article in which of late there have been several cases of sham parcels sold, so that buyers must be careful to deal with firms only of first-class respectability. In one case, a large quantity was sold which was merely

ordinary slag from the iron furnaces without a particle of phosphate in it. In the ordinary course of things, these mineral phosphates cannot be used as cattle-food, though our African contemporary advocates a trial being made with basic slag. There are no signs of the demand for bone meal falling off anywhere, and the continued depletion of bones from India must eventually result in great loss of fertility to the soil. An export duty would tend to keep the selling price down, reduce the export, and force the ryots to utilise one of the most valuable manures they possess.

GENERAL NOTES AND ARTICLES.

Cocaine plants at Ooty. In noticing last week the report of the Madras A. H. Society, we omitted to note that they have sent two hundred plants of *Erythroxylon coca* for experiment in the Ootacamund Botanical Gardens, where we hope they will get on well.

Cryptogamist for the Ceylon cacao canker. We understand that Mr. J. B. Carruthers, late demonstrator at Downton Agricultural College, Wiltshire, has been engaged by private effort to investigate the causes of the cacao canker in Ceylon. The funds guaranteed amounted to £300.

Chocolate and earth-nuts. It was stated in a home paper that recently earth-nuts have been employed for adulterating chocolate on the Continent. Fortunately, however, the presence of arachis—orearth-nuts—in chocolate may be detected microscopically by the large starch grains (with nucleus) visible in aqueous or glycerin preparations, and by the cells with decided internal markings discernible in chloral preparations. Belgian chocolate is perhaps the most likely to be adulterated with earth-nuts, and attention was called to this by A. Bilteryst in a paper read before the Association Belge des Chimistes. If any of our readers care to consult this paper, they will find it in the *Bulletin de l'Association*, No. 10 (12), pp. 447-452.

Jodelite and white ants. How to outwit the white ants is a constant problem in tropical countries. They are everywhere, and they seem to defy all our efforts to get rid of them. We may dig up their nests and take out the queen, but it is only a temporary check. In this age of scientific invention such pests are not likely to be overlooked, and a preparation has been in the market under the name of "Jodelite," which is claimed to effectually protect timber against the ravages of white ants and other insects. The *British Trade Journal*, referring to this preparation, says:—"Jodelite is, we understand, coming more and more into use for the preservation of wood in tropical countries, protecting it against the attacks of the white ant, and preventing dry rot, fungus, and decay generally. It is also being used as a preservative of wood paving blocks, ropes, and as a preventative of dampness in walls, bricks, or stone. Jodelite is applied with an ordinary brush, and its action is described as both chemical and mechanical."

"Kites and Rain."

The American Weather Bureau have flown a new cellular kite, presenting a surface of 70 square feet to the wind, to a height of $1\frac{1}{2}$ miles. The framework is of spruce fir, joined by wires, not nails, and covered with white muslin as durable as black silk. The kite is rectangular, like that of Hargrave, the Australian, but the construction is different and superior to his. The kite carries an anemometer and a meteorograph, weighing $2\frac{1}{2}$ pounds in all. Very fine steel wire weighing 5lbs. to the mile is used for the "string." For a height of one mile, three miles of wire are required, and the total weight of the wire and instruments for the flight of $1\frac{1}{2}$ miles is about 25 lbs. The wire is cut in lengths of 7,000 feet, and after each thousand is reeled out, the flight is arrested, until the inclination of the kite is determined by looking through a telescope at a scale marked on the inner surface of the kite. When a kite has risen above the under currents of air, it is out of danger till it descends into them again. The wire is paid out by a small engine.

MURDEROUS PLANTS.

It must be conceded that many plants lead unexceptionable lives, the utmost violence of which they can be accused being limited to a certain insistence on their own rights to light and air in this already crowded world. But yet others, adopting drastic modes of self-preservation, habitually employ methods of destroying other species which, in their varying grades of ingenuity and cruelty, are comparable to every degree of homicide from culpable negligence to wilful murder.

The common ivy (*Hedera Helix*) is an occasional epiphyte (a clinging pseudoparasitic plant), and though its purpose in embracing the oak is merely to carry its own leaves as far as possible into the free light and air, yet the more successful the ivy, the more rapidly does the suffocation of its supporter proceed. The climber, however, receives no benefit from the death of the tree, which result can only be regarded as due to carelessness or immorality in selecting an animate instead of an inanimate support.

The fungi being vegetables without the green plant-pigment, light-sensitive, food-forming chlorophyll, are forced to rely upon extraneous organic matter for sustenance; and while some procure this from organisms already dead, a large proportion of the class make a systematised attack on other living beings. Nearly every species of fungus has its own special habitat, and both the animal and vegetable kingdoms are subject to their assaults. For instance, *Phytophthora infestans* attacks the potato, causing the disease special to the plant, while *Empusa Muscorum* is the direct cause not only of the death of house-flies but also of the peculiar appearance of the dead insect. The spores of this fungus obtain entrance by the stigmata or breathing apertures of the fly, and there germinating gradually extend throughout the whole system of air tubes. Even after the suffocation of the insect the fungus continues its growth (feeding on the abdominal viscera) until the stomach becomes so distended that its segments are forced apart and the white connecting membrane shows between, giving a ringed appearance to the body, a clear indication of the cause of death.

Bacteria, belonging to this group, are also responsible for the major portion of those epidemic diseases which spread death broadcast among the human species.

Larger and more highly organised plants carry out this insect-killing on a greater scale, and with varying degrees of ingenuity. *Sarracenia purpurea*, *Darlingtonia*, *Californica*, and the various species of *Nepenthes* all adopt the pitcher system, namely a container arranged for easy entrance and difficult egress, with devices to prevent the sides from being scaled, and at the bottom of the pitcher a supply of fluid which by reason of its digestive properties renders the whole arrangement a most effective "stomach." Even *Utricularia vulgaris*, the common Bladderwort, though not secreting a digestive fluid, finds some advantage in using its eel-trap fashioned bladders as snares for water-fleas, which when dead are attacked by bacteria, the plant receiving such decomposition products as it is

able to absorb by way of payment for its share in the destructive work.

Drosera rotundifolia, the Sundew, *Pinguicula vulgaris*, the Butterwort, and *Drosophyllum lusitanicum* retain their prey by means of an adhesive secretion rather than by traps, but they too pour out a digestive fluid and so gradually absorb the nutriment derived from the insects attracted by the delusively glittering aspect of the before mentioned secretion, which stands all over the leaf surface in sparkling drops.

Then, too, who does not know the wonderful Venus Flytrap (*Dionaea muscipula*) which seems to display an almost animal sensibility in opening and closing its leaves, either to reject the exhausted carcass of a captured fly or to retain a newly-arrived victim! Still these gross outrages, which (after all) resolve themselves into a mere catering for the day's necessities, are pardonable when compared with similar deeds which do not benefit the death-dealing plant.

Cordyceps, a genus of fungus, makes its attacks on caterpillars, and, after a period of rapid absorption and growth, throws up a hypha bearing a seed or spore-case of such size that the caterpillar is entirely consumed in its production and remains but a shell, filled only with fungoid tissue.

In one species of this genus, the period of rapid growth does not supervene until the larva attacked has buried itself in the ground in order to undergo its transformation in the pupa or chrysalis stage of existence; at this time the fungus sends up a hypha or fruit-stalk long enough to reach the surface—a distance frequently of six inches—and thereby secures wind distribution for the spores. This affords an illustration of attack specially adapted to ensure provision against the strain of reproduction: but in one instance at least there is a supply of food for the young plant provided in advance at the cost of another species. The usual system is, of course, the storage of food in the cotyledons (or to be popular, let us say the seed) at the expense of the parent plant.

Stapa Capillata, a Russian grass, has seeds provided with an "awn" or bristle, such as, if observant, we may see on every ear of barley, and this long, sharp pointed spike is set with hairs pointing to the rear so that motion forward is easy, motion backward almost impossible. The awn is very hygroscopic; in other words, it absorbs moisture very greedily, expanding in the process. Hence should the seed fall on the fleece of a sheep, the morning dew extends the awn and drives the point into the wool. The heat of the day causes contraction, thus drawing the seed-end closer down to the point, which is then ready for a further advance on the next accession of moisture. This continues until the awn having pressed through the wool enters the flesh, causing mortification and frequently death. It can be seen that this form of seed, in attacking animals not under the care of man, will not only ensure wide distribution, but also manure for the sustenance of the future plant.

In some species of Australian plants this arrangement is rendered more effective by the spiral form of the awn, which gives a greater hold in fur or fleece, and at the same time causes a wound of greater area and therefore, presumably, of more gravity.—*Science Siftings*.

INSECT PESTS IN THE TROPICS.

PERHAPS one of the most marked faunal characteristics of the tropics is the predominance and peculiarities of its insect life. Whether during the day we remark the brightly-colored butterflies, the varied forms of the beetles, the wonderful activities of the ants and termites, the lace-winged dragon-flies, the strange stick and leaf insects; or, at dusk, the large and small moths which flutter round our lights, the shrill note of the crickets accompanying the evening song of other night loving creatures, the flitting to and fro of the various fire-flies: or, still more, experience the tormenting mosquito, or on the trees in our gardens remark the prevalence of strange-looking scales and large and gorgeously colored caterpillars, do we realise the importance of the group here, compared with temperate parts. The constant dweller in the tropics, be he agriculturist or otherwise, has thus his attention continually directed towards the six-legged winged creatures, either in admiration of their form and beauty, or, perhaps more often, in execration at the petty annoyances to which they subject him and the more serious damage to agriculture resulting from their activities.

Seeing that insects have such a constant influence and importance in our daily lives, we shall observe them with greater interest, may

appreciate more their presence or be better able to deal with them as pests, when we know somewhat of their organisation and habits. Fortunately there is a general plan of structure applicable to insects which is readily grasped, and which enables us easily to distinguish them from all other animals. Other characters again ally them to creatures appearing at first sight very distantly removed. Primarily we observe their bodies to be made up of distinct rings or segments. This ringed body they have in common with worms, centipedes, lobsters, scorpions, and spiders. Their paired legs are likewise seen to be constructed of several parts separated by joints differing in form and purpose according to the position in the body of the part we select. In this they differ entirely from the segmented worms, which have only hairs or bristles to aid them in locomotion, but agree with the remaining groups mentioned. This common character of the appendages enables us to form a great group of the animal kingdom, the *Anthropoda*, or joined-footed animals. By the numbers of these feet we can also separate the insects from most of the other members of the *Anthropoda*. The centipedes, lobsters, &c., have a pair, of one shape or another, to every ring; scorpions and spiders have four pairs restricted to the front segments, but insects are all limited to three pairs of true walking legs in the middle division of their body. Again, lobsters and spiders have the whole body divisible into two main portions: insects have, with few exceptions, three distinct and separate regions—the head, thorax and abdomen. Finally, insects differ most advantageously from all other anthropods in the possession of wings; usually two pairs fixed to the two last rings of the thorax. These are to be regarded as out-growths from the body; perhaps, with their hollow veins, developed primarily for respiratory purposes, but afterwards taking on the very important function of aerial locomotion.

By their means insects alone, among the invertebrates, occupy an exalted and active position in the air, such as is occupied by the birds among the vertebrates. To the gift of wings must be attributed the wonderful numerical success of insects in the struggle for existence as well as that of birds; and, in a measure, their advance in activity and intelligence. To sum up, insects are distinguished from all other animals by the following combination of characters. The division of the body into three regions—head, thorax and abdomen—the two first being separated by a well-defined neck; the possession of one pair of feelers or antennæ on the head; the thorax with only three segments, each bearing a pair of jointed legs, and usually a pair of wings to the two last rings; and, lastly, the abdomen with nine or ten segments.

The paired eyes on the head are generally fixed, and differ much in plan from the eyes of higher animals, each being a combination somewhat equivalent to very numerous single eyes. Experiments seem to point to the conclusion that insects cannot distinguish by their eyes the forms of objects, or at best very poorly. The antennæ or feelers have important functions, probably connected with motion, touch, hearing, taste or smell.

The external covering of all insects, and indeed of all the *Articulata* or segmented animals, is a substance, usually more or less hardened, known as chitin. It is an excretion from the soft underlying cellular layer, the epidermis. In the burrowing earth worms a protective covering is not much required, and the cuticle is very thin and delicate. In crabs and lobsters it becomes impregnated with lime salts, and consequently very hard and a most effectual protection. This would, however, be too heavy for the air-disporting insects. It is to be noticed that the chitinous case is not stiffened at the joints so that movement of one part of the body upon another is allowed. The outer skin becoming hard and inelastic soon after exposure, the necessity for the creatures, while increasing in size, to be occasionally moulting their skin as a whole is obvious.

The internal structure of insects can best be studied in such a form as our common large cockroach. Although a very objectionable and much-despised creature, the cockroach is worthy of our great respect on account of its long ancestry. We occasionally give honor to individuals who can boast only of this as their recommendation, and it is certainly one redeeming feature in the present case. Forms similar to the cockroach are met with amongst the early fossiliferous rocks, and extend, unquestionably without any signs of extinction, down to the present day.

On pinning down a cockroach and cutting away the upper portion of the body-wall the interior is seen almost filled with a white loose substance, which is mainly fatty matter held together by the fine air-tubes or tracheæ. When this is cleared away, a partially coiled

ube is seen extending the whole length of the body. It is the food-anal of the animal and is divisible into different parts, each with a separate function in the complex process of digestion. Out-growths from it occur at different places; two in front are known as salivary glands, and produce a digestive fluid, and two other groups occur behind. The first, consisting of short, pouch-like tubes, secrete another digestive fluid, and the second group of long slender tubes has an excretory function. The dorsal heart and the blood-vessels are not readily seen. Running all the length of the ventral surface of the body-cavity which is not however a true *cœlome*, is the double nerve-cord, with enlargements corresponding somewhat with each segment, and from which are given off fine branches to all parts of the body. The complex reproductive organs are seen behind.

With some interesting exceptions, all insects develop from eggs. The life of most may be divided into three stages: the *larva*, caterpillar or grub; the *pupa* or *chrysalis*; and the *imago* or adult; the change from one to the other being spoken of as a *metamorphosis*. The differences between the various stages are, however, very diverse in the many groups, the obvious alterations being much more marked in some than in others.

THE HAWK-MOTHS.

The hawk-moths are among the large moths which, in the evenings, often fly into rooms. They are stout, strong insects, with large hairy bodies. The sucking tube or tongue is extended to a great length, so that it may reach the sweet fluids at the bottom of flowers with a long tubular corolla.

The caterpillars of the various species are large, stout, and smooth, with very beautiful and striking colors. They are continually brought into the Museum as remarkable objects. Those belonging to the family may usually be readily distinguished by the possession of a hump or horn on the eighth abdominal segment. The pupæ are occasionally met with in digging the ground. They are spindle-shaped, often with a long jug-like handle, which is really the case of the sucking tube. The green caterpillar with oblique white lateral lines and a curved hook towards the end of the body, and which lives mostly on the leaves of the tomato, is a well-known form.

PLAGUE OF CATERPILLARS.

Not far removed from the hawk-moths are the insects which have lately given rise in Jamaica to a plague of caterpillars.

A few weeks ago accounts appeared in the papers that the guinea-grass, covering extensive areas in different districts of the southern portion of the island, and also around Kingston, was being destroyed by caterpillars. Specimens of these were sent to the Museum, and were allowed to pupate and afterwards the moth was hatched. They are closely allied to the well-known "army-worm" of America. The long, slender caterpillar lives mainly upon grass, but attacks also corn and sugar-cane. It eats away practically all the young leaves, only the dead stalks remaining. In such numbers do they occur that a whole district may be quickly devastated. The pupal stage in similar forms elsewhere is passed through in the ground, but in the Jamaican species the caterpillar makes for itself a kind of chamber by joining portions of the leaves of grass and forming a thin lining by means of fine threads. In this the small, brown, spindle-shaped pupa passes through its metamorphosis, the result being a medium-sized moth. No further accounts have been received from the country for two or three weeks, so that very probably our worst times are over. The excessive development, at times, of different forms of caterpillars, as compared with other times, is mostly dependent upon peculiarities in climatic conditions.

Since this was first written I have heard from one of my correspondents that the caterpillars, which had disappeared, seem to be now returning in as great numbers, and are again destroying the grass. No doubt these are derived from the batch of eggs laid by the moths resulting from the first caterpillars, and there seems no reason why we should not look forward to a regular sequence of such visitations.

SCALE INSECTS.

The scale insects or bark-lice are well known to every observer in the tropics, and to those conservatories elsewhere with plants from warmer parts. In many respects they form a very peculiar group, and a wonderful variety of species exists within the family, *Coccidæ*, as it is termed. In appearance and habits they differ greatly from other insects, and even the two sexes of the same species are much unlike. The females pass the greater part of their life entirely motionless on trees and shrubs: nothing in their exterior would lead one to suppose them insects. When mature and ready for laying eggs

the scale appears rather as an excrescence of the tree. The males at one stage are lively and active, but have then only a single pair of wings, and no organs for procuring food. The mouth parts disappear during the metamorphosis of the insect, and a second pair of eyes appears in their place. The female is always sluggish and wingless, and in the adult the body is generally scale or gall-like or grub-like and clothed with wax. Though the body of the larval family is ringed and bears legs, all trace of segmentation is usually lost later. Among the *Coccidæ* are found many of the most serious pests of the horticulturist and agriculturist; scarcely any kind of fruit tree is free from their attacks. The numerous species described from Jamaica by one of the former Curators of the Museum, who made a speciality of this group, is evidence of their great abundance in this island, while almost daily specimens are still sent to the Museum for examination. During recent years much attention has been paid, more especially in America, to devising methods for destroying and checkmating the pests; the insecticides which are now most widely used being alkaline washes and kerosene emulsions.

Perhaps the scale of greatest concern at present in Jamaica is the Mussel scale, *Mytilaspis citreola*, affecting the oranges, more particularly in the lower, dried parts of the island. It is not rare around Kingston, and I have received oranges affected with it from St. Ann, but, in the higher orange-growing districts of the island, as at Mandeville, it does not appear to be very prevalent. In its structure and life history it exhibits some most remarkable conditions and may be taken as representative of the group.

The scale in the stage we are most familiar with is a minute brown mussel-shaped body, about one-eighth of an inch long, flattened on its adhering surface, but convex on the other; a slight margin of lighter, less dense material is present. If turned over and examined with a lens, it is seen to be either a dead hollow chamber with a partial membranous floor, or else to contain small eggs irregularly arranged. The manner in which this condition is brought about is one of the most striking processes in insect life. For what follows we are indebted mainly to the researches of the American entomologists. Starting with the eggs laid by the mother, we find that they undergo development, producing minute creatures, mere specks, scarcely distinguishable to the untrained eye. The newly-hatched scale insect is oval in outline, much flattened, furnished with six legs, a pair of antennæ, and an apparatus for sucking the juice from plants. After wandering about for a time, usually a few hours or even less, the young insect settles on some part of a plant, inserts its beak, and drawing nourishment from the tissues, commences its growth at the expense of its host. In a short time there begins to exude from the body of the larva fine threads of wax, which are cottony in appearance. Sooner or later the larva begins to excrete a pellicle, which, although very thin, is dense and firm in texture. The mass of cottony fibres either melts or is blown away. After a period the larva sheds its skin; in some species, after the permanent scale begins to form, in others before. In this latter case the larval scale is plainly visible either upon the surface of the scale, or at one extremity, as in *Mytilaspis*. The change which the larva undergoes in this first moult is a very remarkable one; with the skin are shed the legs and antennæ, and the young scale insect thus becomes a degraded grub-like creature, with no organs of locomotion. The mouth parts remain, and by them the insect is firmly attached to the plant and continues to draw its nourishment from it. From this stage the development of the two sexes differs.

In the second and last moult of the female the second skin is joined to the first, and with it forms part of the scale which covers the body of the insect, but generally it constitutes only a small proportion of the ultimate scale, the greater part of which is excreted subsequently to the second moult.

Soon after the second moult of the females, the adult males emerge, and impregnation is supposed to occur at once. The body of the female then increases in size, becoming distended with eggs; these are deposited beneath the scale, the body of the mother gradually shrinking to make room for them. Ultimately the parent dies, but the eggs continue their development; the dead body of the mother, with its scale, serving as a chamber or cradle for their protection until hatched. The male scale insect during the early part of its grub-life is indistinguishable from the female. At the first moult, like the female, it loses its legs and antennæ; the second moult agrees with that of the female, but there the similarity in form between the two sexes ceases. It is now in the pupa state, and has long antennæ and rudimentary legs and wings. After a third casting of the skin the adult male appears with three pairs of legs,

and a large pair of wings in front, by means of which it can fly, but the mouth parts are replaced by supplementary eyes, and it is unable to eat. In the particular genus *Mytilaspis*, to which the orange scale belongs, the scale proper of the female is elongated, and the exuviae or dead skins are seen at one extremity. The scale of the male is similar in form to that of the female, only smaller. Fortunately it does not appear that the scale injure the trees or the oranges very seriously in Jamaica, but the unsightly appearance given to the fruit when the parasite adheres in considerable numbers renders it desirable that measures should be taken to prevent the spread of the pest.

LETTERS TO THE EDITOR.

SOME KANAKS.

SIR,—It is a great pity that efforts are not made in each district to keep kanaks or tasks of various works uniform. A little combination that way would effect a very great saving in our labour bill, I am convinced.

If only to keep the ball rolling, I would mention a few kanaks on a Coonoor estate, a few miles from town:—

Earthwork	... 20 feet lead only, $\frac{2}{3}$ soft earth, $\frac{1}{3}$ hard gravel.
Wodders	... 12 cubic yards per Re. 1.
Badagas	... 9 " " "
Stone work in mud, workers to find all materials.	
Wodders	... 50 cubic ft. per Re. 1.
Bricks, Burning (fuel free)	... Rs. 4 per 1,000 bricks.
Building in mud	... Re. 1 per 1,000 "
Fuel, 3-foot logs per 100 cubic ft.	
in situ	... Re. 1
$1\frac{1}{2}$ "	... Rs. 2

Are the above rates cheap, dear, or the usual standard? Anyway, I should like to see more of the question of

KANAKS.

THE SIROCCO TEA ROLLER.

SIR,—I have read your remarks in your issue of 11th instant regarding Davidson's "Sirocco" tea roller.

My experience is that when empty, a child can set it in motion by pushing the pulley, and with a full charge, a man of ordinary strength can set the machine going. In fact very little power is required to exert the full capabilities of the machine.

Into the question of H. P. I will not enter, but a small trickle of water with a 16' wheel will give satisfactory results.

The machine only has to be known to be appreciated. The leaf is *always cool*, there is no leakage, and *no spit*, which was always a fault in earlier rollers.

The "Sirocco" tea roller revolutionises tea manufacture to a great extent, as pressure was formerly considered necessary to give a strong pungent liquor, but the Belfast firm have solved the question, and we have now a machine which gives unbroken "mal" oxidised during the process of rolling, turning out a full tippy tea, without being blackened by the exudation of juice from the leaf under treatment.

OOTACAMUND,
13th December, 1897.

S. HAWES.

FERTILIZERS.

SIR,—In speaking of fertilizers, Prof. S. M. Tracy dwells with some emphasis on the fact that since all the food of plants is absorbed in either a liquid or gaseous form, plant food even if it be present in abundance cannot be used by the plant, unless it is in a form in which it can be dissolved in water or in some of the very weak acids found in the soil. "Insoluble food," says the Professor, "is of no more value to the plant than is raw iron ore to a manufacturer of watch springs." The plant must not only have an abundant supply of food, but this food must be in such a mechanical and chemical condition as to be

available to the plant during the few weeks in which it is making its growth. However rich a soil may be in available plant food, he need not look for a good crop if the ground is so hard and lumpy that it cannot be penetrated by the roots, and it is useless to supply any fertilizer which contains food locked up in an insoluble form. So that whatever crop we may grow or whatever fertilizer we may apply, a thorough pulverization of the soil is "*essential to success*." Take note of the above, planters who are applying artificial and chemical manure.

"KOLA."

COFFEE.

Up and down trenching.

The most familiar method of continuous trenching on steep land is of course that as nearly right angles as possible with the slope of the hill. The down trenches are avoided for fear of wash. Those, however, who have tried trenching down hill, though for other than the usual reasons, declare that wash is far less frequent than with the cross trenches.

White ant pest in Selangor.

A correspondent to an exchange thus describes the serious ravages which white ants commit in Selangor:—"Can any of your numerous readers suggest a remedy for stopping the ravages of white ants which threaten on some estates here to be even a greater curse to the planter than either green-bug or leaf-disease was in Ceylon. This sounds like an exaggeration, but I only wish it were. Regular coolies are kept employed cutting out the dead trees and making holes for supplies. The ants work in patches as a rule, utterly destroying good as well as shuc trees with the utmost impartiality, and when a single tree is attacked, we know it is only the first of many surrounding it to go. The ants commence by entirely devouring the taproot, and when they near the surface of the ground, they work inside and clean up the centre of the tree. They are thus hidden from observation, and are secure from the attack of other varieties of ants which would destroy them could they only get at them."

Slump in Liberian.

Planters of Liberian coffee of the lower sorts must be prepared for a slump in prices, says a *Ceylon Times* correspondent. At the official coffee auctions, held on Tuesday last, at Amsterdam, there was a heavy fall in prices. Good average Java on spot declined from 45 to 35½. This sudden drop of 9½ c. is without precedent. The decline is ascribed to the large receipts and heavy crops, especially in Brazil. If coffee became cheaper, it would undoubtedly compete more with tea than it does at present. Drunk pure (and it is the pure coffee drinkers who would increase), at present prices it is far more expensive than tea. A good cup of pure coffee of that strength that I say the Britisher favours is rather an expensive luxury as prices have been. Consumption would improve with lower rates, and it would be a good thing to see less money going into the pockets of the cultivators of chichory at Bruges and elsewhere and more to genuine coffee growers. Chichory is not necessary to coffee, and its use is due to the two following necessities: a darker cup for the consumer and a bigger profit to the retailer.

pruning and leaf disease. The Coorg correspondent to the Calcutta *Planter* thus gives his ideas in the connection of pruning with leaf disease. Alluding to the loss of leaf caused by the disease, he says: "This being so, I should think it advisable to so direct the pruning as to aid the tree in recovering; and this cannot be accomplished in a better way than by leaving all the young shoots that may be on the trees when pruning time comes round. This at any rate would give the trees a chance of breathing. It has all along been the practice to cut off all the young shoots, in fact everything that has no promise of berries on it. In my humble opinion this is simply aiding and abetting leaf disease with a vengeance. In the case of trees that have lost a lot of leaf, I think leaving the young shoots would aid materially in bringing out a good blossom and setting it. In one place I know it apparently had this result, although the object with which the shoots were left was 'to shade the blossom!' In fact so convinced was a neighbour that leaving the shoots had put the good crop on the trees in this case, that he did the same thing next year with, as I think he thought, satisfactory results."

Native coffee. A correspondent writes: "I have on my garden now tea, formerly planted in coffee, a few old trees, the only survivals of many thousand coffee plants. One of them has evidently never been topped or pruned in any way and is a grand tree some 5 feet high, with two sound clean stems and no suckers. It has borne an excellent crop for many years past, and is now fairly well laden. It receives no care or attention at all, is situated in a remote corner of the estate, which by the way is about 6,000 feet. But this particular tree is growing just below a large rock. The other trees are in the open, lower down. These have all been topped and pruned in their early days, but have now shot up suckers. These, being surrounded on all sides by tea, and receiving no attention at all, naturally do not look extra thriving, but bear fair crops regularly every year. I do not profess to have any practical experience at all with coffee, but would point out what seems to me an interesting point. I have always understood that the stems of 'native coffee' bear a crop and die down every two years or so. This is certainly not the case with the trees on this garden. The sucker stems are quite six years' old, and in the case of the tree growing under the rock, which has only one stem, quite twelve years. The crop seems to be borne altogether on the primaries, which are very whippy and short. Secondaries and tertiaries do not appear to be developed at all. The pruning,

COFFEE SHADE TREE.

Sun-dried *Erythrina Lithosperma* loppings, &c., contain per ton:—

61.50	lbs. Nitrogen.
57.38	„ Potash.
14.92	„ Lime.
13.68	„ Phosphoric Acid.

Seed cured under Messrs. Sutton and Sons' advice.

Orders should be booked early for the coming crop of seed from the parent trees of above analysis at Rs.6 per pound containing about 2,000 seeds. *Germination guaranteed.*

Only thornless variety extant, and is not procurable anywhere save from the

MANAGER, ARIENKOW ESTATE,
Shencottah.

save the mark, is automatic, and consists of the primaries, which die back after two seasons or so, falling off. These of course are replaced by new growth from the stems. One cannot of course argue on the *ex uno disce omnes* principle, but it seems to me that the lesson taught by these few trees is not wholly unimportant. I am thinking of planting up a small block of coffee the usual distance apart, forcing the alternate trees to the utmost till they get too crowded, say in six years or so, then removing these trees altogether, leaving the remainder twelve feet apart, in the Brazilian style. Shade is not practicable at this elevation, so I propose planting thick shelter belts round each square of twenty-five plants or so. I must stop here, for this is only theory."

ASSIMILABLE NITROGEN AND LEAF-DISEASE.

III.

GREAT RELUCTANCE TO FORM NITRIC ACID.

In my last paper it was suggested that Nitric Acid must exist in soils in much the same proportion as ferrous is to ferric, and in a much lesser ratio to the amount of organic matter.

The retention of Nitric Acid by the soil must also be in the same ratio, but I wish to confine this paper to-day to its formation only.

State of iron an indicator. It is a simple matter of fact that the formation of this most important constituent of the soil must be thus dependent on the state of the soil. For this reason. Remembering the extreme affinity of iron for oxygen, and seeing that Nitric Acid is purely a product of oxidation, you have in iron a useful INDICATOR of the amount of oxygen that is pouring through the soil.

Soluble salts. Lack of air, however, naturally does not, as hinted at before, effect only the formation of Nitric Acid, but also the different stages of solubility of the whole soil, including all the mineral foods as well. But it is impossible to take nitrogen of organic matter and see it in such different stages of solubility as one can mineral matter. Practically speaking it must be either tightly and insolubly bound up in organic matter, or else it must be directly soluble. On the other hand, the attacking power on the mineral matters of the soil by the acid juices on the tips of the roots is well known and well shown by the effects of roots on rocks. Yet it is well known also that roots have no such attacking power on organic matter—its nitrogen must be fully oxidised and loosened from organic matter to be fit for plant food. The exceedingly small proportion of the soluble salts as shown in the analysis thus further confirms the state of low aeration indicated by the excess of ferrous.

These soluble salts are of course found by merely passing water through the soil and analysing it for those materials which the water has dissolved and taken out. In really active and healthy soils Nitric Acid, as well as portions of each of the mineral foods, should be found present.

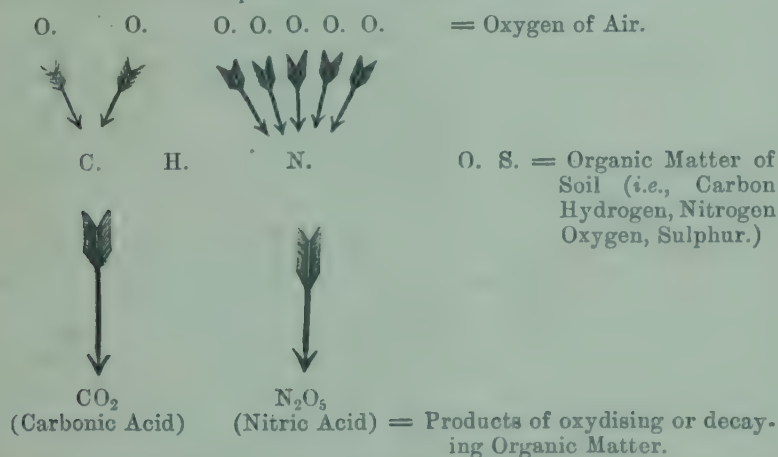
Organic matter has strong retentive powers on soluble salts, as also have alumina and iron soils. So that in those soils containing high proportions of both of these useful adjuncts, it cannot be for the lack of these that the soluble salts are so poor. No, on the other hand it must be that they never were formed. And it cannot be said that these soils were washed out by heavy tropical rains before analysis, as they were exposed to air unusually long before that process.

This however shall be related hereafter, so as to show the really exceptional difficulty these soils had to become active even when unhindered by any water. Other analyses are at hand now whose soluble salts in water are existing as high as '8, others as high as '4 and '6, yet these have not the advantages of the high amounts of organic matter of these coffee soils or of their iron and alumina constituents. These soluble salts bear out again the meaning of the excess of ferrous in the coffee soils and the effect it has on Nitric Acid must inevitably be greater than on the mineral matters, for nitrogen, as said before, is not rendered soluble by acid juices of roots.

The products of decaying organic matter.

The products of decaying or oxidising organic matter are Nitric Acid and Carbonic Acid—these are at least the chief ones. If organic matter is in a good state of decomposition, it is clear these two products should be visible in a healthily active soil. Both of these products, I am anxious to show, are exceedingly poor in coffee soils. It must be repeated that Professor Voelcker's analyses, and also Mr. Robinson's, must be taken together. For while Professor Voelcker shows Nitric Acid as so small as not to be detected by analysis, the analyses by Mr. Robinson have not taken notice of this important test, while they have rather minutely gone in for the separate test of Carbonic Acid gas. That is, they have taken this Carbonic Acid out separately and tested it, it will be noticed, to three places of decimals. This is extremely useful. For by it, one can pretty well gauge at what rate the other important product of the oxidation of organic matter, Nitric Acid, is going on. So that combining these two sets of analyses together, we may see both the two products of organic matter decay as exceedingly small indeed in such soils. Further than this, one can plainly see the cause of it set forth in analysis by certain hindering factors, not only low oxides of iron but high water holding powers necessarily belonging to clay and humus soils. Though of course this latter cause will induce the former low oxide state, but once the low iron oxide state is there, it acts as a further hindrance on the formation of Nitric Acid.

The following diagram may make clear the important action of the oxygen of the air penetrating the soil and attacking organic matter at its various depths.



The above shows the oxygen of the air penetrating the soil, breaking up or decaying organic matter, and rendering soluble in water the carbon and nitrogen in the form of Carbonic and Nitric Acids. Not that the former of these is any direct use to plant growth, but since Mr. Robinson does not analyse for Nitric Acid, it has its use, showing by its paucity, in his analyses, the very poor way this important Nitric Acid can form. The cause of the non-existence of Nitric Acid is ferrous and high water holding power. But although the organic matter of these soils is so high and should in consequence show good amounts of these two products of oxidation, yet there are several ways of clearly demonstrating the quite exceptionally low amounts of the assimilable nitrogen formed in such soils.

Oxidation by bacteria.

It is well known that the decay of organic matter is brought about by the intervention of myriads of bacteria. It is they that oxidise the soil and not the simple chemical process. They at least need ample oxygen in the pores of the soil to breathe with and accomplish their work of destruction of organic matter. They, feeding on and taking into their system organic matter, inhale with every breath

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oxygen. The waste products from their bodies are exhaled as Carbonic Acid gas; the other product, Nitric Acid, would be in the excreta. The soil is oxidised by the intervention of these bacteria, therefore, and it stands to reason, like all animal life, they need oxygen to breathe with and oxidise their food. But by the very ferrous nature of these soils (1) you prove absolutely that oxygen is not passing through the soils, at least only at the very slowest rate. (2) What little that does pass through has to run the gauntlet of the oxygen-loving ferrous oxide, so that the bacteria have extremely slender, if any, chances of getting a share. Also, it must be said that in Mr. Robinson's analyses there are distinct indications of the presence of ferrous not only in the lesser soluble forms, but existing and causing acidity in the highly objectionable form of ferrous sulphate. The properties of this soluble sulphate of iron are smothering or taking away oxygen from bacteria is well known and taken advantage of in medicine. These antiseptic or decay-arresting properties I believe strongly will be found to exist, if actually tested for, in some of the high organic soils, especially of wet districts and well-drained lands. Also in flat lands, those near water courses, those in humid situations and under heavy shade. It is to be regretted that this soluble ferrous sulphate, which gives such strong suspicions of being present at any rate in the Mysore soil of Mr. Robinson's analysis, was not analysed for, since let alone its dire effect on Nitric Acid already formed—it is clear how disastrous it is on soil oxidation, or call it bacteria, by the powerful way it collects and absorbs oxygen.

The following may be of interest. The analyses of our soils and of cattle manure vary little. In both the nitrogen is much the same. But cattle manure being organic matter that has passed through a process of oxidation in the body of the animal, the nitrogen rendered more soluble than that in our low-oxidised soils. The action of the cattle consuming the herbage is much the same as bacteria feeding on humus: oxygen being inhaled and passed through the food.

Differing ways of analysing soils. It will be observed that Professor Voelcker's analyses are done on soils heated to 212°F. The others by Mr. Robinson were merely dried before analysis, just sufficient warmth to drive off any excess moisture. Does this account for the far lower oxide state shown in the latter's analyses? Seeing this much lower state of oxidation in those done by Mr. Robinson, frequently bordering on acidity, and other things, one cannot help questioning whether once any peculiarity in this way is noticed as running through a class of soils, there not a better chance perhaps of the soils remaining in the natural low oxide state than if agitated to a temperature of 212°F. For this, by heat setting the soil particles in rapid motion would tend to oxidise soils of this nature and give them a more active healthier appearance? This is asked because the set of soils done by Mr. Robinson are so infinitely less aerated than those done by Professor Voelcker and yet they do not seem to have such a clayey nature, judging by the alumina amounts. Anyhow if this assimilable nitrogen was so small as not to be detected in Professor

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Voelcker's analyses, what must it be if it were analysed for in those one by Mr. Robinson, with their infinitely lower state of oxidation.

Mysore and Pulney soil compared. These two soils were so opposite in their state of health or oxidation, that they were placed close together in analysis to facilitate comparison. The whole thing is to prove the difficulty of certain soils to form Nitric Acid.

Note how in the Mysore soil, with its huge amount of organic matter, the carbonic acid is merely 24%. This rich organic soil therefore, with its 23.061% of organic matter, is only able to show such a poor result as 240% carbonic acid from the decay of its organic matter. On the other hand, notice the healthier Pulney soil, only 8.223% organic matter and combined water and yet 783% carbonic acid. At what an infinitely quicker rate, therefore, may one perceive that oxygen is doing its work, decaying the organic matter AND THEREFORE FORMING this Nitric Acid, which is after all the point under discussion. Carbonic acid being no actual food for plant life, I have merely taken it as one of the products of decay, to show how slowly the other product of decay, Nitric Acid, must be forming.

The cause of slow decay.

If the proportion of ferrous to ferric is observed in both these soils, the rate at which air is passing through the interstices of the soil will be pretty clearly seen. One may imagine also, once that 5.097 of ferrous exists in the Mysore soil, what a hindering action it has on the formation of Nitric Acid.

Again, observe the water-absorbing power of the Mysore soil against the Pulney—over twice the power. Observe also that it only parts with $\frac{1}{3}$ rd of its moisture, while the Pulney soil parts with $\frac{2}{3}$ ds. This greater water-absorbing and water-holding power of Mysore soil would be brought about naturally by the three times greater amount of organic matter in the Mysore soil over that of the Pulney.

It could be said, therefore, that if a cubic foot of Mysore soil and a cubic foot of Pulney soil were taken and given precisely the same conditions and same amount of water, that the Mysore soil would contain over ten times the amount of water. Filling the interstices of the soil to this degree would naturally hinder the entrance of the air. The soil would remain in a lower state of oxidation—the carbonic and nitric acids would in consequence form in far less and in a far slower degree. The Pulney soil is one such as might feel a drought quickly, but is certainly one which would recuperate after rain, certainly five or six times quicker than the Mysore one, even given the same conditions. But, as said before, do not these highly organic soils often pertain to wet districts and often with poorer sub-soil drainage, perfectly suited to big jungle growth. But would it be possible to say, looking at the matter every way round, that the Mysore soil would be better able to afford Nitric Acid to the roots of coffee to that shown by the Pulney one? The comparison between the two soils is made only to bring forward certain points to show how slowly Nitric Acid can form in ferrous soils—not to say that the Pulney one is good in this respect, though the latter, it must be admitted, is not one heavily encumbered with moisture, ferrous, inactivity and therefore lack of that product of oxidation—Nitric Acid.

I trust I have not wearied your readers, but wish to emphasize this lack of soil aeration next time and show that this reluctance of coffee soils (of S. India at any rate) amounts to stubbornness to oxidise, that is by showing the unfair conditions these soils had to become aerated before analyses were made. Further oxidation than they would have had in ordinary nature by tillage and drainage.

NITRIC ACID.

THE INFLUENCE OF BEES ON CROPS—(Continued).

THE arrangement of the reproductive organs in blossoms vary very considerably in different classes of plant life, and the most casual observer must have noticed the many forms of insect life. Those insects that subsist on the honey they extract from flowers are, in many instances, so constructed as to appear to fit the flowers they visit. Again, the construction of certain flowers is only adaptable to the wants of certain insects. The nectary is so situated in different classes of flowers that the honey it contains can only be obtained by the insect designed to fertilize them. The length of tongue in moths, butterflies, and bees is well known, and its length plays no inconsiderable part in perpetuating varieties and species

of the vegetable kingdom. In Darwin's work, "Fertilization of Orchids"—a book everyone interested in the subject should read—he mentions one flower as having a spur-like form, from 10 to 11 inches long, with the nectary situated at its base, and for the purpose of obtaining the honey contained therein there must be an insect with a tongue of an equal length. It appears that this particular orchid is a native of Madagascar. Some orchid hunters, in searching that island for specimens, came across a moth with a tongue of corresponding length—evidently the agent employed by nature to fertilize this particular plant. Some plants are only met with in particular localities; in other localities, having the same conditions of soil, warmth, moisture, etc., they are entirely absent. Again, where some species of plants are found, certain insects are also to be met with, and *vice versa*. Thus, particular plants are dependent on certain insects, and particular insects on certain plants, for fertilization.

In a previous article it was mentioned that the pollen-bearing organs were not always to be met with in the same flower. In the melon, cucumber, and other plants belonging to that tribe, some of the flowers are male—i.e., possess stamens only, or have no pistil; while others are female—i.e., possess a pistil but no stamens. The pollen of this tribe of plants is comparatively heavy and viscid. It is therefore obvious, as the two sexual flowers are situated at some distance the one from the other, a foreign agent must convey the pollen from the stamen to the stigma of the pistil of the female flower. In some of the Egyptian palm-trees there are what are termed male and female trees—i.e., the sexual flowers are on separate and distinct plants. The trees are often at considerable distances the one from the other. The variegated laurel (*Aucuba japonica*) is another of these diœcious shrubs, and of course, like the palm-trees referred to, the male and female flowers are on different trees. It was introduced into England many years ago by the Dutch from Japan. It so happened that the plants first introduced were female plants, or in other words bore female flowers only. There were no pollen-bearing flowers, consequently no seed could be produced, and propagation was carried on by cuttings only. Some years afterwards a Mr. Fortune introduced some male plants. These were planted in close proximity to some of the old Dutch ones that had been perpetuated by means of cuttings. The result was that an abundance of fertile seed was produced the following season.

The pollen of the variegated laurel is now an article of commerce in the London Covent Garden Market.

The length of time the pollen of some of the palms and laurels retain their vitality is remarkable. The pollen in others must be utilized soon after it is discharged from the anther, or its procreative property is lost.

The quantity of pollen grains discharged from flowers is something enormous, especially in those plants where the sexual flowers are on different trees. The flowers on a Chinese laburnum (*Wisteria sinensis*) were calculated to contain no less than twenty-seven billions of pollen grains.

From these illustrations it will be noted the utter impossibility for certain plants to be perpetuated from seeds, or to produce fruit without aid from an agent outside themselves. Here the bee comes in to play its important part in our fruit-crops.

What I have said in relation to the distribution of the sexual flowers in the variegated laurel, palms, etc., is equally true and holds good in the blossoms of our orchard fruits, with this exception—that they have not separate sexual flowers. Notwithstanding this, the stamens mature, and the pollen is distributed some time (in some cases days) before the pistil, or rather the stigma, is sufficiently developed to receive it. Thus, while the male organs of some of the flowers have perfected, maturation in others is still progressing, and so with the pistil; so that the fertilization of fruit blossom by its own pollen is as impossible as if the reproductive organs were on different plants, or at least on different flowers on the same tree; therefore a foreign agent is as essential to transport the pollen from hermaphrodite flowers as from that of diœcious. The oft-quoted aphorism, "Nature abhors a vacuum," was reconstructed by Darwin into "Nature abhors perpetual self-fertilization;" and the various ways Nature has arranged the pollen-bearing organs is Nature's safeguard against what is termed in-and-in reproduction, and cross-pollination ensued. Cross-pollination has long been recognized in the economy of the reproduction of members of the vegetable kingdom. It was known as far back as the time of Herodotus. He describes the process of the transference (capriciation) of the pollen from the male tree to that of the female, by which means a crop of dates was ensured on the Egyptian palms.

Some early blossoming trees seem to burst forth suddenly, especially pears. In looking through a truss of pear blossoms that have just opened, it will be noted that the parts perfected are the calyx, the corolla, and the stamens. The pistils are still undeveloped. After the anthers have discharged their pollen, the ripening of the pistils commences; and by the time the stigma is receptive, there is no pollen from the first opening blooms where with these early-maturing blossoms can be fertilized. It is obvious that the all-important pollen must be obtained from some other flowers, or there will be failure in the crop of the tree that has so blossomed. I shall point out further on that the pollen from any source, if the bees were to convey it, will be as great a failure as if the stigma were entirely deprived of that fertilizing influence. Seeds must be fertilized by pollen from their own species. A newspaper clipping—I think from a Brisbane paper that I have now in my possession—says: "If one were to plant twenty acres with stone pippin apples, or with Cleopatras, or with Duchess pears, and no other kind of apples or pears within a half-mile, it is not at all likely that there would be any fruit. If there were not trees within the radius of half a mile, the experiment would be a failure; bees would carry pollen from other trees, two or three miles away. It is necessary to have a few of some other variety of apple or pear which bears blossoms at the same time, or about the same time, and then they will pollenate each other, so that both varieties will bear fruit. Bartlett pears are fertilized by Duchess d'Angoulene, Easter Beurre, Anjou, and by others. The thing required is to have the flowers of each variety mature at nearly the same time. There is at least one instance in this colony where a large block of apples of one kind has been planted for many years, and has never borne any fruit, although the trees are very strong and healthy, and bear perfect flowers every year. The pollen is ripe before the pistils are ready to receive it, and by the time the pistils are mature the pollen is all gone." I once read in an American paper a similar failure in connection with cherry orchards, where the bees had all been removed because they were accredited with eating holes in the ripe fruit, and thus reducing their market value. After the removal of the bees from the district the trees gave no, or at the most but a slight crop of fruit. After about three years, the bees were returned to the district, and the trees went on bearing as heretofore. With ignorant men, the poor little bees get the credit of a host of evil they never do. If all orchardists knew the value of bees, apart from that of honey-producing, no orchard would be seen without them.

Every grain of seed requires a grain of pollen to fertilize it. By removing the husks from a corn-cob whilst in a green state, a fine silken thread will be seen attached of each maturing grain. It is the organ of reception, and it is absolutely imperative for a grain of the dust from the anther (the flower on the top of the corn-cob) to fall or be conveyed to the point (stigma) of each silken thread. In a mature cob of corn, misses in the rows of grain are often observable. This is caused by the pistil not having received its necessary grain of pollen; and caused either by an injury to its stigma or an insufficiency of pollen. Deformed fruit are common occurrence, more especially with apples and pears. This is caused by imperfect fertilization. A section of an apple shows the five sections of the ovary, with four of the ovules of seeds, perfectly fertilized, and on the sides of the fruit, where the seeds are so fertilized, it is perfect in form. The unfertilized seed in the ovary has caused the deformation in the fruit. If, in four out of the five sections seen in the ovary of apples and pears, the seeds therein are perfectly fertilized, the fruit is likely to develop, although it will be a deformity; but if only three be so fertilized, the fruit seldom comes to perfection. The light seeds, those without kernels, that are frequently met with in pumpkins and other members of that family, are caused in a similar way—i.e., by the bees being prevented by some cause from supplying a sufficiency of pollen to do the whole work necessary in reproduction.—*Ag. Gazette, N. S. Wales.*

TEA.

North America.

This market yearly shows a very satisfactory increase in its consumption of Indian and Ceylon teas. From 1st January to 30th September the quantities for the three years ending 1895 were as follows, fractions of thousands omitted:—

	1897.	1896.	1895.
Indians	3,900,000	2,500,000	2,400,000
Ceylon	4,500,000	3,000,000	3,000,000

China's spasmodic struggles.

The Viceroy and Mandarins are trying their little best; after the method of English statesmen with British agriculture, to spur on the tea-growers to greater care in their preparation of tea. A similar want of success would seem likely to attend their efforts. There is one point interesting to note, and that is that the Amsterdam tea trade report pronounces most unfavourably on the new make teas lately attempted. It is declared that the really first-class Chinas have no rival, and Chinese growers are advised to revert altogether to the old methods, and confine their attention to producing the finest grades possible.

The Bengal United Company.

There is rather a run upon the word United just now. A large new Indian Tea Company has just been floated under the title of the Bengal United Tea Company, Limited. The capital is £300,000 in 15,000 Preference and 15,000 Ordinary. The properties are in Assam, Cachar, and Darjeeling. £40 per acre for the tea is asked, not a high figure, but the Preference shares need all the security that can be offered when they are given but 5 per cent. interest. That these shares are cumulative Preferential and rank in priority to the Ordinary shares in respect to capital goes without saying, but money must be very cheap for 5 per cent. for Indian tea shares to satisfy investors. There are 14,203 acres of land, which the Company acquires, unplanted.

Abolition of tea duty in Belgium.

The abrogation of the import duty on tea in Belgium ought to have a beneficial effect in the way of expanding the trade, says a contemporary. Surrounded on three sides by foreign States, each frontier town might be constituted a depôt and so many new markets opened. The Indian Tea Association has not the means to send agents to each of these places, but we think that the large companies now forming in London for amalgamating the smaller ones might devote a portion of their capital to carrying out this suggestion. Direct importation to the centre of retail consumption has been attended with success in the case of Belfast, Glasgow and Manchester, and anything tending to bring producers and consumers in touch with one another is manifestly advantageous to both. We have strongly advised exploiting of possible markets by other entrances into a country than through the capital cities.

Keep our seed pure.

It was stated the other day, says the same paper, that the formation of a large tea reserve from seed procurable from the Lusha Hills would be an excellent thing, and we are one with him in this proposal. Aljal, or the large abandoned "jhum" near where Kalkhom's village stood, are both well suited to the purpose and sufficiently far from the old Cachar gardens to guard against hybridisation from inferior *jat*. Placed in either of the positions we mention, conservation could be strictly exercised, and though opposed, as a rule to Government interfering with established industries, we

think this is a case calling for some supervision, inasmuch as the danger of the hillmen destroying the trees to get at the seed on the upper branches is imminent. In a conserved forest this practice could be prevented, and, another thing, whatever precautions may be adopted on the gardens in the plains, there is not only likelihood of degeneration by insects, but gradual deterioration from want of a change of pollen. True, we know there is a stock of seed all over Upper and East Burma, but we do not know even the approximate amount, and in the last Administration Report for Assam, it came out that the supply of seed from Muni-pore had fallen off considerably within the last few years, but from what cause is unknown, although the ruthless humer is supposed to be at the bottom of the mischief. The farther afield we go to the eastward, the more likely we are to fall in with seed originally carried from N. E. India, which would be most undesirable as it approaches in quality that brought round from China sixty years ago by Mr. Fortune. Of course all this is looking rather far ahead, and present day people will feel inclined to mutter "*Après moi le deluge*," but unless precautions are taken to preserve intact the quality of Indian tea seed, the country, as a tea producer, may drift into the same plight as China is now in, for there is no better husbandman than the Celestial, who resorts largely to manures, pursues methodical cultivation, takes every care of his crops and bushes, but has allowed himself to be swayed by ultra-conservatism in planting from the same stock year after year, recent travellers proving that that alone has been the cause of the decadence of the once flourishing China tea trade. Tastes may change in the next 300 years, and other matters may engage the attention of the planters, but our own opinion is that the taste for "the cup that cheers" will endure as long as tolerably authentic history tells it has in China, and it would be a pity that we should lose our supremacy even in the next three centuries.

Lushai seed.

Judging, he continues, by Mr. Sisson, of Aijil in the North Lushai Hills, continuing his advertisements, he would appear to have been successful in securing a much larger quantity of seed than he at first anticipated, but as most planters had provided for their requirements in the spring, it is unlikely that the gentleman will obtain the price he demands, viz., Rs. 100 per maund. The *jât* is undeniably of the best variety, and, if anything, superior to Manipurie. Though seed for the ensuing season's extensions has been arranged for from planted sources, there is always a certain amount of suspicion entertained with regard to it, especially when obtained from gardens that have large areas of thrown up tea laid down with the old style of plant in the vicinity of the more recent plantations put under Manipurie, from fear of the seed being more or less hybridised. Should there be, as seems probable, a glut of seed—though moderate one in the market—we would advise all planters to secure it for extensions of 1899. Putting out eighteen months seedlings has much to recommend it; not only is one year's cultivation in the open saved, but in case any undesirable seed may have been inadvertently introduced, such can be more readily detected in the nurseries than when planted out, and though the planting may be more expensive than the former mode of "slapping them in" in vogue in the sixties, when carefully done, it is much more satisfactory.

Tangye's Oil Engine.

The following has been sent to a Ceylon exchange:—"Cost of working half a cent per lb. of tea made: A report has recently been received by us regarding the cost of working a Tangye's patent 8 horse-power oil-engine supplied to Fairfield estate, Peermaad, South India. The trials of the engine, which extended over a period of three months, were carried out under the supervision of the Superintendent of the estate, and the figures here quoted have been authenticated by him. The engine is a Tangye's 8 horse-power engine, and the oil used is ordinary Russian 'Daylight,' the contents of one case (two tins) being about 65 lbs. oil, or say 9 gallons. This oil was purchased at Alleppey, and had to be transported to the estate for 12 miles by boat, and about 60 miles by bullock cart, a total distance of about 72 miles, the cost of which is included in the figures below. The total cost of oil consumption on the estate per lb. of made tea was as follows:—Date May, 1897; total days worked, 29; average hours worked per day, 4 hours and 58 minutes; total tea sifted, 11,013 lbs.; total tea manufactured, 9,908 lbs.; quantity of oil consumed, 14 cases; cost per lb. of tea made, 1.32 pice .67 of a cent. In a similar manner during the month of June, the cost per lb. of tea made was 1.17 pice .60 of a cent. For the three months ending 30th June 1.30 pice .67 of a cent. The oil consumption in each case includes the cost of all oil used for the factory lamps, and all wastage and loss that may have occurred in addition to the cost of transporting it for 72 miles. The actual cost of the oil required for driving the engine itself may therefore be reckoned at about $\frac{1}{2}$ a cent (Ceylon coinage) per lb. of made tea.

The consumer and the planter.

"You drink tea, I grow it," says the planter to the consumer. "Suppose we deal direct." At least this is what he ought to say, judging from the unsatisfactory state of the market. As the *Indian Planters' Gazette* points out, no reliable teas can be bought under two shillings at home, though the average price may fall as low as eight pence; auction charges, &c., say 2d., duty 4d.; these bring the price up to one shilling. Allow two pence a pound extra for warehousing and contingencies, and the margin of profit remaining to the seller is actually 10d. per pound. To do away with the middlemen, i.e., the brokers, would not be the easiest thing in the world. But it should be possible. The cost, our contemporary hazards, might run up to a million sterling, but the planting interests are so great that this sum could be raised. The many grades of tea now recognised should be done away with, only the coarse leaf and dust being separated, and the rest all blended together.

There are details many and tedious to be settled at this stage. Briefly, we suppose that the change advocated would imply the substitution of the brokers for our own distributing agents. A garden belonging to the Growers' and Sellers' Association would send a break home in the ordinary manner, but graded simply as suggested above. The Association would pay a fair market price for it, use it to make the blends required, and sell direct in packets to the grocers and the general public. The profits now enjoyed by the middlemen would go direct to our G. and S. Association. In course of time the break prices would level up to the retail price. Miucing Lane opposition would be strenuous and formidable, but could undoubt-

edly be conquered by combination amongst planters. The immediate result would be an appreciable lowering of the retail prices and a corresponding increase in consumption. The Growers' and Sellers' Association would be able to get an unequalled grip of the market, and be able to make blends for foreign markets and direct operations in a manner hitherto impossible.

The possibilities of the scheme are vast indeed, and fascinating to an extreme degree. A large capital, great combination and an exceptionally shrewd executive are needed.

Yield of blue-gum plantations.

From some interesting figures lately supplied us by a correspondent, we gather some valuable information regarding the yield of fuel from gum-plantations:—

	Age.	Elevation.	No. of trees per acre.	Stack per acre.	Annual increase per acre.	Average dimensions of trees.	Annual increase per tree.
	Years.	Feet.	No.	Cubic ft.	Cubic ft.	Cubic feet.	Cubic feet.
1	5	7,235	847	2,966	593	3.5	0.7
2	6	5,954	980	2,151	302	2.2	0.3
3	9	6,694	1,045	5,963	503	5.7	0.6
4	10	7,382	469	6,894	585	14.7	1.4

Equivalent of cubic feet in tons is 45 cubic feet=1 ton, Govt. ratio.

Taking the question of elevation first, it will be seen that the highest plantations give decidedly the best results, both in actual stock and annual increase per acre. Naturally the youngest plantation (No. 1) leads the way in annual increase per acre, while it is undoubtedly the lower elevation that make No. 2 and 3 so inferior to the others. No. 4, by the way, is the average of two plantations, very similar in age, elevation and other details. Another factor to be noted is the number of trees per acre, No. 3 containing far too many for its age, nine years. The chief influence on the yield, however, to be gathered from our figures, is that of elevation. Details as to soil, exposure, &c., are unhappily not given.

The Government ratio of 45 cubic feet to one ton seems to be far under the mark, as this gives very nearly 4,500 lbs. dry weight per the usual stack of 100 cubic feet. With timber under ten years, the average runs according to our experience to 3,500 lbs. per 100 c. ft. or 64 cubic feet per ton. Naturally the younger the trees, the lighter the stack, for it is certain that the cubic space occupied by the stack certainly does not represent 100 solid cubic feet of timber owing to the interstices between the logs. The actual weight of a cubic foot of dry blue-gum timber runs out, it is true, to the Government standard of 45 lbs. We mention this to warn planters basing the actual dry weight of the fuel they grow by such a high standard as 45 lbs. per stacked cubic foot.

A query was recently propounded as to whether it paid better to buy or grow one's fuel for firing purposes. This depends of course on the price of the outside fuel available and on the quality of the reserve land on the estate. The annual yield in lb. of fuel per acre of gums varies from 10½

thousand pounds at say 6,000 feet to 20½ thousand pound at say 7,000 feet. Or say the plantations were clean felled in successive plots each five to six years' old, the yield would vary from 70,000 lbs. to 105,000 lbs.

Any further information that our correspondents may furnish will be gladly welcomed.

THE NEW STEAM DRIER.

SOME weeks ago we gave a brief description of a new type of Drier, patented by Mr. G. W. Sutton, late of Assam. We now take the following full description from a home exchange. The principle strikes us as being both good and safe, though undoubtedly running counter to the established ideas on tea-firing:—

The chief distinguishing feature of this machine, the invention of G. W. Sutton, late of Assam, lies in the fact that superheated steam is employed as the source of heat instead of the ordinary coal or wood furnace of other tea driers. It consists essentially of a series of ten galvanised wire trays, arranged in an oblong case of sheet iron, the whole being raised about 2ft. 6in. above the ground on iron supports, and having in front below the trays a sheet-iron ledge or table to receive the trays while being filled or emptied.

Commencing from the top, and running below and above each pair of trays from one end of the machine to the other, is a single ½in. pipe, bent upon itself several times in a gridiron fashion, and terminating below the lowest trays.

Through this pipe superheated steam passes, being taken direct from a boiler at a pressure of from fifty to sixty pounds, or can be admitted to the machine at a lower pressure by regulating the reducing valve should lower temperatures than 240deg. be required, and issues from the outlet end either as steam or condensed water according to the temperature maintained. By this means the air within the drier, which enters from below at either end, and passes from a central opening at the top, the whole width of the machine is rapidly raised to a temperature of from 230 to 240deg. Fah., causing at the same time a slow upward current of 270ft. per minute, this being sufficiently rapid to remove the moisture as it evaporates from the leaf or other material. In the absence of green leaf the trial was made with used tea leaves, to which rather more than 30 per cent. of moisture had been added. Owing to its broken character and the manner in which it aggregated in masses on the trays, this was not so suitable for the purpose as tea leaf in the ordinary process of manufacture, which, as it dries, has a tendency to contract and roll up and thus allow the freer passage of air; but notwithstanding this disadvantage the results obtained were very satisfactory, the charge of moist material being thoroughly dried in about twenty to twenty-three minutes.

Mr. Sutton puts the ordinary charge per tray of half-fired leaf at four pounds, and the total outturn per hour of finished tea at eight pounds.

For re-firing before packing about two chests per hour is estimated as the tea could then be put thicker on the trays.

The steam employed per hour produced on condensation about six and one-third gallons of water, allowing one pound of coal for every eight or nine pounds of water evaporated this would represent consumption in the boiler furnace of from seven to eight pounds per hour.

The boiler supplying the steam on the occasion referred to was 3-h.p. vertical, which at the same time supplied a small engine driving the machinery of the workshop, but with the combined demand no difficulty was experienced in maintaining a pressure of from fifty to sixty pounds. This points to the fact that as in most factories there are now boilers of very considerable horse-power, steam could easily be supplied to several such driers without much extra demand either on the boilers or furnaces.

It is claimed on its behalf that the machine is strongly made and has no working parts to get out of order and occupies little space. Considerations of the greatest importance in tea-houses where breakdown in the busy season would entail serious loss. It can also be easily packed, the only removals required being the top air-shaft (8in. to 10in. high), the iron supports, and the front tray or table. The chief advantages of this machine, the inventor points out, lie

first, in the ease with which an even temperature can be maintained throughout, a most essential point for good firing; second, the impossibility of the tea being scorched or burned; third, the absence of excessive draught, which not only carries off, but oxidises a portion of the essential oil in the leaf; fourth, the much lower risk of fire in a factory, the only furnace required for heating one or several being that of the engine boiler itself; fifth, the comparatively low price, viz., £55 (in London). Mr. Kelway Bamber, who was present at a recent trial of the machine, was very favourably impressed. While primarily intended for tea-drying, the machine has a wider field for employment, being suitable for any other organic products, especially those which, on account of their proneness to discoloration or the loss of volatile constituents, require a well-regulated temperature and low draught. It is these two conditions, says the inventor, this machine fulfils without in any way prolonging the time required for the drying process.

DISTRICT ASSOCIATIONS.

SHEVAROY.

PROCEEDINGS of the Monthly Committee Meeting of the Shevaroy Planters' Association held in the Victoria Room, Yercaud, on Monday, the 6th December 1897, at 1 P.M. PRESENT:—Messrs. J. C. Large, C. G. Lechler (*Chairman*), H. W. Leeming, Rev. J. M. Kampf, Messrs. C. Rahm, W. W. Hight, and R. Gompertz (*Honorary Secretary*).

Read notice calling the Meeting.

Resolved that a copy of the publications *Produce World* and *Central African Planter* be henceforth taken in and that a list of Elementary books on Chemistry, Botany and Geology be obtained as soon as possible with a view to selecting those most suitable for the proposed Planters' Library.

Read letter from Mr. Lechler re proposed improvements of Road to Killeour village from Traveller's Bungalow.

Resolved that the Honorary Secretary be requested to forward the letter to the Collector and to state that as the Association consider the improvements very desirable, it is hoped that he will be pleased to give the permission and assistance desired.

Read letter from Mr. Large about small change.

Resolved that this letter should stand over till next Meeting, Honorary Secretary meantime sending a reminder to the Collector to reply to his letter regarding the encashment of currency notes at the Treasury in which this matter was also treated.

Read complaint of Mr. Anderson that the Tahsildar had charged him income-tax twice over and the correspondence thereon. Mr. Anderson stated that if the Collector was satisfied, he had no alternative but to bow to his decision.

Resolved that the Honorary Secretary be requested to write to the Postmaster-General suggesting that as the Mail train does not stop at Kadiampatti, either the bags for the Nagalore Post Office should be thrown out at that station or that they should be delivered at Mullapuram, instead of, as at present, going on to Salem and then coming back by slow train to Kadiampatti.

The following correspondence was read and recorded:—

Correspondence about Lady birds.

Do. do. Agricultural Chemist.

Do. do. Re-opening the Mints.

Letters from Messrs. Lambert and Sullivan accepting the appointment of Honorary Members of the S. P. A.

Mr. Quarmer's communication about Leaf-disease.

The following papers were laid on the table:—

Proceedings of the Planters' Associations of Central Travancore, Coorg, Lower Pulneys and Nelliampathy.
2 copies of Commercial circular No. 10 of 1897 on Resin, Turpentine, Tar, &c.

Planting Opinion of 6th, 13th, 20th and 27th November and of 4th December 1897.

C. G. LECHLER,
Chairman.

ROBERT GOMPERTZ,
Honorary Secretary.

WYNAAD.

PROCEEDINGS of a General Meeting held at the Meppadi Club on Wednesday, November 24th, 1897. PRESENT:—Messrs. Behr, Day, de Fonblanque, Glennie, P. Lamb, R. Lamb, C. A. Mackenzie,

D. Mackenzie, Mackinlay, B. Malcolm, J. R. Malcolm, J. S. Malcolm, S. H. Powell, Robinson, Romilly, Trollope, Winterbotham, and Hockin, *Hon. Secretary*. Mr. C. A. Mackenzie in the chair.

1. The proceedings of the last meeting were taken as read.

2. *Re-opening of the Indian Mints*.—Read letter from the Acting Secretary, U. P. A. S. I., covering draft of proposed circular from Chairman, U. P. A. S. I., to all Associations of producers, Mill owners, and Chambers of Commerce in India and Ceylon, expressing the U. P. A. S. I.'s views and inviting their opinions on the proposed policy of advocating the reopening of the Mints, the cessation of all tampering with Exchange, and the imposition of a 5% export duty to compensate the Government of India for its losses on Home charges. Proposed that this Association approves the draft of the Chairman's circular. An amendment was brought forward to the effect that the U. P. A. S. I. should await the expression of the views of others before declaring its own, especially as regards an export duty. The original proposition was carried with only two dissentients. Read letter from Mr. Gompertz of the Shevaroy Planters' Association to the Secretary, U. P. A. S. I., forwarded by the latter gentleman for favour of the Association's opinion. Resolved: This meeting approves of the opinion expressed by the Chairman, U. P. A. S. I., on Mr. Gompertz's proposal of an export duty on a sliding scale, viz., that however suitable to us it is practically unworkable and would be strongly opposed by merchants, and that therefore it should not be incorporated in the Chairman's circular.

3. *Dindigul-Palghat Railway*.—Read Memorial to H. E. the Governor of Madras urging the early construction of this line and covering letter from Mr. T. J. Ferguson. Resolved that the Honorary Secretary be instructed to sign the Memorial on behalf of the Association.

4. *Poodoopadi Hotel*.—Read Petition from Chuckieth Shangaren, the Hotel-keeper, saying that he was unable to carry on the hotel any longer at the loss he now incurred. Resolved that this Association will contribute Rs.15 a month towards the maintenance of the hotel.

5. *Non-Service of Warrants, Coimbatore District*.—Read letter from the Superintendent of Police, Coimbatore, in reply to one from the Honorary Secretary, stating that he had issued a circular that such non-service would in future be severely dealt with. Recorded with satisfaction. Read also letter from Mr. Brown, Cooly Agent at Podanur, complaining that the expense of serving warrants was not covered by the monthly subscriptions paid him. Resolved that this is a matter for Mr. Brown to arrange with those on whose behalf he incurs expense.

6. *Want of Cash at Vayitri and Meppadi Post Offices to Cash Money Orders for nine days in August last*.—Read letters from the Collector of Malabar and Post Master General in reply to letters from the Honorary Secretary complaining of this. Resolved that the Honorary Secretary be instructed to write to the Planting Member of Council requesting him to make an interpellation in Council as to whether the Post Office is not bound to cash all Money Orders granted on demand.

7. *Roads*.—Read letter from Mr. Mackinlay stating he had been unable to interview the Collector of Malabar as requested. Recorded with a vote of thanks to Mr. Mackinlay for the trouble he had taken. Mr. B. Malcolm drew the attention of the Association to the bad condition of the Ghaut Road. The road is deeply rutted and in places cut through the metal, while there is no amount of repair metal collected owing to constant diminution of promised grants. The Honorary Secretary was instructed to address the Collector of Malabar on the subject.

8. *New Form of Contract*.—The Honorary Secretary stated that he had written Messrs. Winterton and Edge, as directed on September 6th, asking for further opinion on the payment of wages clause, had received no reply, and had written to remind Messrs. Winterton and Edge that it was important the matter should be settled before the close of the year.

9. *Analytical Chemist*.—The Honorary Secretary reported that members had only guaranteed 30 analyses a year towards the support of an Analytical Chemist. Resolved that this Association is of opinion that the employment of an Analytical Chemist is a matter for private enterprise and should not be a charge on the U.P.A.S.I.

10. *Leaf-disease Remedies*.—Read letter from Mr. Quarmer forwarded by the Secretary, U. P. A. S. I., for opinion. Resolved that this also is a matter for private enterprise.

11. *Revenue Settlement*.—The Honorary Secretary stated he had written the Collector of Malabar on the sale of Mr. Boosey's land, suggesting that a list of all lands, on which Europeans pay tax to

Government direct, should be attached to the list of jemmies to avoid any chance of the sale of such lands in future for the jemmies' default. Although he had received no reply from the Collector, he had received a request from the Tahsildar that he would furnish a list of lands on which he paid tax, and doubtless other members had also received such a request. He therefore thought it well to explain the reason of the request.

12. *U. P. A. S. I. Circulars.*—Read and recorded circulars on the following subjects: Appointment of Mr. Ronaldson as Acting Secretary; Sir W. Mackworth Young's reply to the vote of thanks; Notice of the publication of an Addendum to the Proceedings of 1894 and 1897; North Wynaad Planters' Association Subscription; Deposit of Rs.5,000 of the Reserve Fund with Messrs. Arbuthnot & Co.; Audit of Reserve and Famine Funds and Accounts for 1896-97; Completed Government Cinchona; Papers placed on Editor's Table to be furnished to the U.P.A.S.I.; The Investigation of the Malarial Parasite postponed for lack of funds will not be lost sight of; Early payment of Subscriptions requested.

13. *Papers on Table:*—

Ceylon Planters' Association Proceedings to Feb. 17th, 1897.
Addendum U. P. A. S. I. Proceedings 1894 and 1897.
Nelliampathy P. A. Proceedings, September 1897.
Central Travancore P. A. " " October 1897.
Coorg " " September 1897.
Lower Pulneys " " July & October 1897.
Shevaroy " " September 1897.
Malabar District Board Proceedings, Aug., Sept., October 1897.
Rules for leasing 80 square miles on the Anamalais.
Govt. of India Commercial Circulars 1897, No. 8 India Rubber Caoutchouc or Gum Elastic, No. 9 Mahogany, No. 10 Resin, Turpentine and Tar, Department Land Records and Agriculture on Carrot Seed.

14. *The Next Meeting* will be held on January 5th at noon at the Meppadi Club.

15. *Notice of Motions to be brought forward at Next Meeting.*—Mr. Lamb gave notice that he would bring forward a motion at the next meeting to the effect that a permanent Chairman and Committee be appointed for the transaction of business as in former years. Mr. deFonblanque gave notice that he would bring forward a motion to the effect "that in future all local business affecting the welfare of Wynaad shall be discussed and receive consideration before the affairs of other Associations."

(Signed) C. A. MACKENZIE,
Chairman.
(") J. WILLIAMS HOCKIN,
Hon. Secretary.

Coffee Scale and Lady Birds:—

P.S.—Members who are willing to subscribe towards the cost of introducing Lady Birds to combat Scale Pests (especially green bug), towards which the U. P. A. S. I. voted Rs.2,000, the Lower Pulneys promised Rs.4,000, and the Government of Madras promised to pay half the cost, are requested to inform the undersigned what they will subscribe. The Secretary, U.P.A.S.I., has asked for an early reply, but his letter arrived too late for the meeting.

(Signed.) J. WILLIAMS HOCKIN,
Hon. Secy., W. P. A.

NILGIRIS.

PROCEEDINGS of a General Meeting of the Nilgiri Planters' Association, held at the Masonic Hall, Ootacamund, November 26th, 1897.
PRESENT:—The Hon'ble Mr. H. P. Hodgson, Messrs. W. Mullaly, H. T. Sinclair, J. H. Pascoe, J. T. F. Wilson, O. W. Marden, A. E. Ramsay, E. R. Kindersley, F. Bell, H. D. Wilbraham, L. C. Liebenrood, H. Wapshare, G. Nash, B. A. Marden, L. W. Grey, J. Mackenzie, W. L. Edmiston, and E. G. Windle, *Hony. Secretary*.
Hony. Member—H. Stuart, Esq., Collector of Nilgiris. *Visitor*—T. Clarke, Esq. Mr. Mullaly was voted to the chair. (1) The Proceedings of last Meeting were read and confirmed. (2) Report of the delegates to the U. P. A. S. I. Meeting was as follows:—
2. *Report of the Delegates to the U. P. A. S. I. Meeting, 1897.*—The Report of the Committee of Enquiry was the first subject taken up. The letter from the U. P. A. to the Government of Madras will be read to you, but is confidential, as far as publication is concerned. (v. Confidential Supplement to 1897 Proceedings.) The scheme adopted for raising funds was as follows:—(1) That the voting be

by elected delegates. (2) That every Association be assessed at a minimum of one anna per acre on one-fourth of the area under cultivation represented by members of the Association, and that the maximum of one anna per acre on the total area under such cultivation may be subscribed by an Association, and that a vote shall be given for every Rs.10 so subscribed. (3) Each Association shall be allowed to send five delegates. (4) The rule relating to proxies shall stand. (5) The donation list shall be kept open for the Reserve Fund. According to the above, the minimum subscription to be paid by the N. P. A. would be as follows; taking the cultivated area represented by our members as 18,000 acres, one-fourth of this, or 4,500 acres put into annas equals Rs.281, whilst our maximum subscription would be Rs.1,125. This method of raising funds is estimated to bring in Rs.5,000 to Rs.7,500 annually, the latter being the maximum, whilst the average ordinary expenditure is about Rs.3,000. The income and expenditure account for 1896-97 is laid on the table, also statement of Reserve Fund. The latter shows Rs.10,674-12-0, of which Rs.1,750 have been drawn, leaving Rs.8,924-12-0 in hand. It was settled that the U.P.A.S.I. should be registered as a Company, the Honorary Secretaries of the different Associations being the first members. This gives the U. P. A. a legal status and the liability to the Secretaries is practically nominal. The Rules were carefully revised and a copy of them is laid on the table. It was decided that the Casket and Address should be paid for out of current funds and the various sums specially subscribed were therefore refunded. Other important subjects brought forward resolved themselves into the question of the advisability of employing experts. The combating of Leaf Disease and Scale Pests, and the adulteration of manures were all considered, and it was agreed to endeavour to secure the services of Mr. Cameron, Superintendent, Government Gardens, Mysore, to advise on improving the strain of coffee, to give pecuniary assistance to Mr. Newport's scheme for getting rid of green bug, and also help towards the engagement of an Agricultural Chemist who would analyse manures and soils and advise on the best methods of cultivation. The spread of green bug on the Lower Pulneys deserves a separate reference, as it is undoubtedly one of the most serious evils which threaten the coffee planter, the destruction caused to crop and to trees, as mentioned by Mr. Newport, being more sudden and complete than that caused by any other pest. Government has recognized the gravity of this matter by its readiness to aid the planter in taking measures against the bug, and the U. P. A. has sanctioned a grant of Rs.2,000 for the same object; the Government assistance will take the practical form of half the cost of introducing lady birds which prey upon this and other scale pests, and the Lower Pulney District alone, as Mr. Newport informed us, will subscribe between four and five thousand rupees. As you are aware, we have green bug in this district, though the damage done by our species is trifling, and we also have black bug, attacks of which have ruined many a crop. The Lower Pulney green bug has been observed on the Nelliampatties, which tends to confirm Mr. Newport's opinion that it is spreading northward, and it is therefore most advisable that this district should participate in the distribution of the lady-birds which will be imported. We cannot, however, expect to do this unless we contribute toward the expenses, and your delegates recommend this subject to the consideration of this Association. Resolved that the report be adopted and method of raising funds for the U. P. A. S. I. be confirmed.

(Signed) H. PERCIVAL HODGSON.
(") E. G. WINDLE.

3. *U.P.A.S.I. Funds.*—The Honorary Secretary stated that the N. P. A. would pay as much above the minimum subscription fixed by the new scheme as the Association could conveniently afford, without increasing the subscription of its members; the amount would probably be some Rs.600 to Rs.700 per annum. As the Honorary Secretary had received an urgent appeal from the Secretary, U.P.A., for early payment of a part at least of 1897-98 subscription, Rs.400 of this had been paid in and the Honorary Secretary proposed to forward a balance after receiving the N. P. A. subscriptions for 1898. With reference to the Rs.71-4-0 subscribed by the N. P. A. towards the casket and address to H. M. Queen, the U. P. A. S. I. decided finally to meet this cost out of the U. P. A. funds and therefore returned the Rs.71-4-0 collected by the N. P. A. Resolved that this amount be, with the consent of the subscribers, paid into the Association account.

4. *Agricultural Chemist.*—The Honorary Secretary spoke to the following effect: "It was agreed at the Bangalore meeting that the

two most important points in dealing with leaf disease were to get strain of coffee, if possible, that would be disease proof and to have the coffee trees in such robust health that they would be in the best position to resist the fungus, or, having got it, to throw it off as soon as possible. Experiments have been tried in hybridizing, principally between Liberian and Arabian coffee, and the results, though apparently greatly accidental, are encouraging. Mr. Cameron, Superintendent, Government Gardens, Mysore, who takes great interest in the subject, has kindly offered to give any information or assistance in his power to those planters who wish to try experiments in hybridizing. Mr. Cameron's report on the hybrids produced on Mr. Brooke-Mockett's estates was read. With regard to an Agricultural Chemist, the Honorary Secretary reported that the amount promised by members of the N. P. A. up to date was Rs.2,100 per annum for three or five years, but that this matter must remain in abeyance until it could be seen what action would be taken by the Government of Mysore, which at present contemplated engaging an Agricultural Chemist for that province. If this were done other Associations could not expect assistance from the various Planting Associations in Mysore, and the Rs.2,000 conditionally promised by the U. P. A. would also be lost. It was pointed out by the Chairman that in Brazil experimental Agricultural Chemistry was conducted by the State for the benefit and guidance of Coffee Planters.

5. *Importation of Lady-Birds.*—The Hon. Mr. Hodgson addressed the meeting, recapitulating what this Association and kindred bodies were doing, referring to the work of Professor Koebele in Hawaii, the different species that were of value as eradicators of coffee insect pests, and what assistance the Government of Madras was prepared to give in importing lady-birds from Australia. After all this enquiry, effort and trouble, he thought the Association should not allow the matter to drop through. He said he was a great sufferer himself from the ravages of scale insects and was prepared to give a substantial donation towards the cost of the importation. Mr. Ramsay followed up this announcement and promised Rs.1,000 towards the same object on behalf of those whom he represented. On the Honorary Secretary canvassing for subscriptions among the planters present, it was found that Rs.1,675 were promised which the Honorable Member suggested should be speedily paid in, to enable immediate steps to be taken for sending a competent agent to Australia to obtain and bring a consignment of the lady-birds to this country. He thought the expenses of the importation would not, roughly speaking, exceed £500. The Honorary Secretary was asked to send round a circular to ascertain what further support the Association will give.

6. *Re-opening of the Mints.*—The Hon'ble Mr. H. P. Hodgson made the following speech:—In asking you to support the letter from the Chairman of the U. P. A. re the re-opening of the Mints, I do so knowing that you yourselves, in common with all producers in India, have already experienced the fatal effects of the artificially enhanced Rupee, which enhancement has been caused, as you know, by the closing of mints to the free coinage of silver. In speaking on this subject, I would ask your patience for a short time, as I feel that a proposal of such importance should not be accepted by us without some discussion leading to a justification of the measure. In the credit of our reputation for commonsense, I think we should make it clear that it is not the dread of an enhanced value of silver and a corresponding rise in exchange that actuate us, but the calamity which is already upon us of having to compete with other countries enjoying a natural exchange, causing a difference in the silver value of our produce already amounting to between 40 to 60 per cent. We cannot hope to survive in such a struggle, and it is this certain knowledge which is stirring us now. Could an international convention embracing all the silver countries of the world be arrived at by which the value of silver throughout the world could be reinstated, we should have little to fear beyond, perhaps, the temporary disruption which any such far-reaching financial effects would necessarily cause in trade and commerce. We should feel that with patience things would right themselves and that the unfailing power of supply and demand would rapidly step in to level prices. But the isolated action of the Government of India when by closing the mints in 1893, the foundation of our present troubles was laid, has placed us in a position of disadvantage, and with us I maintain the whole producing millions of India, which can in the end bring nothing short of ruin upon us, for we cannot hope to maintain our position in the markets of the world against countries not similarly

taxed. That a large rise in exchange would bring about results disastrous to India and its people is admitted by the Government of India in a financial despatch to the Secretary of State for India, dated the 16th September 1897. This despatch is a reply to a despatch dated the 5th August 1897, from the Secretary of State, forwarding a proposal from the Government of the United States and France that India should join them (in a transparently one-sided movement) to establish a ratio of $15\frac{1}{2}$ of silver to 1 of gold. I do not propose to go into the details of this correspondence which, though deeply interesting, is somewhat lengthy, but it is fortunate for India that the Government at once declined to have anything to do with the proposal, and in their arguments in support of this decision made the admission which I have referred to above. They write:—"In any case we are of opinion that the true interests of India demand that any measures for obtaining the stability in the rate of exchange between gold and silver should be based upon a ratio not greatly differing from 16d. the rupee, and that any measure which would raise the rupee materially higher than that level involves great dangers for which we see no adequate compensations." Now, what the nature of these "great dangers" anticipated if the rupee is pushed up beyond 16d. per rupee is, is shown later on in the same despatch. The Government revenue is largely obtained from the assessment of land, and the danger feared is the impoverishment of the ryot, through a falling away in the value of this produce, rendering him unable to pay his rents. I must quote the para. in the despatch referring to this point. It says:—"One of the factors in fixing the demand of Government for Revenue (land revenue) is the price of agricultural produce; if that price falls away materially the relation between the price that the ryot can obtain for his produce and the assessment he has to meet may be so seriously altered as to affect the agricultural prosperity of large tracts of country." Now, here is an admission from the Government of India in an important despatch to the Secretary of State, that an exchange of much over 16d. to the Rupee would bring ruin to the ryot and disaster to the Government. In this we quite agree, it is exactly our contention, but why fix the point at which such ruin threatens at 16d. per rupee? It is because the basis on which this arbitrary turning point is fixed is unsound, and the real cause of danger either not seen or left in the background. The loss and danger to the producer are not caused by a high exchange, but by the artificial means by which, it has been raised, which enables other countries producing the same product, and enjoying a natural exchange, to put their produce in the market at a profit at prices at which we cannot grow ours, with the heavy bounty we have to give. What we want, therefore, is a natural exchange; an exchange affecting all nations using silver to the same extent, putting them on an equal footing, and on those terms prices can be left to look after themselves, for they will be righted by the law of supply and demand. The only way we can have a natural exchange again is by the opening of the mints. This is why we, for ourselves, and speaking also for the voiceless millions of India's producers, who are equally interested, but are unable to represent themselves, cry aloud against the ruin which is being brought upon us by the closing of the mints. While seeking for this relief it would be hopeless and absurd to ask Government to forego the salvation brought to their finances by the rise in exchange without suggesting an alternative. We are not financiers, but we know so much that with the rupee at its natural value the Government would be at once in hopeless financial difficulties, if not Bankrupt. It behoves us, therefore, in pressing our cause, to suggest an alternative scheme by which the finance of Government might be recouped, for the loss that would follow the opening of the mints, and this we do in proposing an export duty of 5 per cent. which we believe would be cheerfully paid. Export trade and agriculture would be immensely stimulated at once by the relief from the burden they now bear of the artificially enhanced rupee, and a corresponding increase in export revenue would result. Another advantage of such a source of revenue would be its certainty for purposes of calculation, while the revenue derived by Government from exchange, for it is nothing else than revenue or taxation, can scarcely be regarded as secure, for in spite of the hopeful view of Government of the approaching attainment of stability in exchange, "there are many well versed in the mysteries of exchange who predict a collapse of the edifice erected on its artificial foundation and none can say that such a prediction is impossible." This matter of exchange is one that affects us most deeply; a little calculation will show that its artificial rate imposes on the producer taxation which

in amount is simply appalling. I will take my estate at Craigmore as an example, with a crop of 30 tons of coffee worth £100 per ton, which is the price of the day in the quotations, I am losing in the silver value of my produce (in which value I have to pay all my labour and cost of production) from Rs. 200 to 250 on every ton, or on every £100; or, taking the lesser sum, Rs. 6,000 is the amount that Government have taxed me on this one estate for the year by exercising their monopoly in silver and closing the mints. This is an actual fact that cannot be controverted; I merely mention my own case, as I happen to be the speaker and have the figures, but the same applies in like proportion if you take the case of any other planter or ryot, who grows any produce for export, whether it be the planter with his tea and coffee, or the poorest ryot with his few measures of surplus grain, or the hide of his dead goat. The producer is bearing the greater, by far the greater portion of this burden of taxation, and the goose with the golden egg is being slain. I am afraid we shall have at first to fight our battle and at great disadvantage, because the major portion of the vast number of our fellow-sufferers are uneducated and unable to understand what is hanging over them, unless indeed their elected representatives take the matter up on their behalf. The merchants of India are not affected as we are. If the silver value of any article falls, they pay a correspondingly lower price for it; but it is certain that in time the value of their business must suffer with the increasing inability of the producer to export when, in a smaller degree, they will feel the shoe pinch. The banks in turn will suffer from the falling away in trade, and in time, I firmly believe, that one and all will join in condemning a policy, which has relieved a temporary financial difficulty, but is bringing upon the country that worst of poverty, the poverty of its working millions. Gentlemen, I thank you for having listened to me so patiently, and I now propose that the Chairman's letter before the meeting be adopted with a special confirmation of the proposal set forth in para. 7.

Mr. Harold Stuart then addressed the meeting deprecating the action of the U. P. A.; he believed that the re-opening of the mints would be detrimental to the producer and to others, and said that statistics proved that a fall in silver resulted in higher wages being paid to labour. This latter statement was emphatically contradicted by several planters of over 20 years' experience, who asserted that they had paid 4 annas per man when the rupee was at 111, that this wage had never raised and was still the rate paid throughout the district. Mr. T. Clarke addressed the meeting supporting the re-opening of the mints. He quoted Sir David Barbour to the effect that the rising of the rupee to 1s. 4d. was not due to the action of Government in closing the mints, but to extraneous causes; that in spite of the mints being closed, the rupee was likely to fall to 1s. 1d., and he instanced that the fall had already begun. He strongly advised planters to collect statistics, showing the very wide area of industrial depression due to Government interference with the currency. Mr. L. W. Grey and others also spoke and the Hon'ble Mr. H. P. Hodgson briefly replied. The circular was finally approved of.

7. *The Famine Labour Experiment.*—The Honorary Secretary reported that the experiment was practically a failure, only one small gang having been brought to the Nilgiris. The failure was caused partly by the ordinary reluctance of natives to leave their homes, and partly by adverse reports circulated by coolies who had returned from Travancore, but chiefly by heavy rain having fallen in the Cuddapah District whilst the gangs were being collected. The account of funds subscribed, all letters and accounts from the Agent in the Cuddapah District, Mr. G. H. Cammiade, had been circulated amongst the supporters of the scheme and a small balance in hand distributed *pro rata*. The gang which had been imported was working well, and it was hoped would prove the nucleus of more extended future relations with Cuddapah. The cost per head amounted to Rs. 5 which was a recoverable advance.

8. *Cattle Trespass.*—Government Order, dated 19th August 1867, was read, providing that the penalty for Cattle Trespass might amount to Rs. 50 instead of Rs. 10; also that Pound Keepers shall levy fines at double the ordinary rates within a radius of three miles from the pounds specified. Read letter from District Magistrate, as follows:—"Any owner or keeper of cattle who through neglect or otherwise damages or causes, or permits to be damaged any land, or any crop, or produce of land, or any public road, by allowing such cattle to trespass thereon, shall, on conviction before a Magistrate, be punished with fine not exceeding Rs. 50." All, therefore, a

planter who suffers such damage has to do in future, is to ascertain the name of the owner or keeper of the cattle, and complain against him to a Magistrate and not to the Police. And Section 25 enacts that any fine thus imposed may be recovered by sale of all or any of the cattle by which the trespass was committed, whether they were seized in the act of trespassing or not, or whether they were the property of the person convicted of the offence or were only in his charge when the trespass was committed.

9. *Contract form applicable to Act XIII.*—Mr. Edmiston proposed that this Association take Counsel's opinion as to the suitability of the contract form, drawn up by Messrs. Winterton and Edge, with special reference to the number of witnesses, necessary or permissible, and with regard to the time clause as marked A. The Honorary Secretary seconded this and the proposal was carried.

10. *Tea Prompts and Trade Discounts on Coffee.*—Mr. Mengel's letter, dated 27th July 1897: "It was decided that any alteration in the three months' prompt would be detrimental to sellers, in so much that it would keep away small buyers and lessen competition at the auction sales. (2) As to the Trade Discounts on Coffee the question will be brought up before the Chamber of Commerce later on."

11. Letter from the Secretary of the European and Anglo-Indian Defence Association stating that the Association would be glad to receive authenticated returns of cases of failure of justice, and assistance to its revenues from the N. P. A. Recorded.

12. *Increased Police Supervision.*—The Hon'ble Mr. Hodgson read correspondence between himself, the Inspector-General of Police, and Mr. Longden, in which the latter stated the increased amount of Police supervision that would be provided during the current Coffee Season. This consisted of the appointment of three head and twenty-eight extra Constables to watch the routes along which Coffee was usually conveyed and prevent theft generally. Mr. Mullaly pointed out that no provision was made for increased supervision in the Bhowani Valley at or about Nellitoray, where thefts were frequent. The Honorary Secretary was requested to draw the attention of the Police authorities to this point, and the Association passed a hearty vote of thanks for the increased supervision granted.

13. *Madras Survey Bill.*—Read letter from the Planting Member, dated 31st October 1897, proposing that all owners of estates wishing to take advantage of the Amended Act should at once write to the Honorary Secretary giving names of their estates, particulars as to situation and area, with the subdivisions and their areas, and stating whether the property is held under the waste land rules or otherwise. The Honorary Secretary would then forward such details to the Collector of the District, with a letter asking that the necessary steps be taken to bring such estates within the operation of Clause 14 of the Act. Approved.

14. *Change of District Officials.*—Resolved that frequent changes are detrimental to the interests of the Planting Community.

15. *Cure for Leaf-Disease.*—Read letter from the Secretary of the U. P. A. forwarding copies of Mr. Edgar Quarne's letters of the 17th and 18th October, offering to submit his system of curing leaf-disease to a confidential Committee. Resolved that the Honorary Secretary communicate with Mr. Quarne on the subject.

16. A vote of thanks was passed to the Delegates of the U. P. A. S. I. A vote of thanks to the Chairman closed the Proceedings.

(Signed) W. MULLALY, Chairman.

(") E. G. WINDLE, Hon'y. Secretary.

VARIA.

BEFORE WE CAME.

A Doggerel of New Wynaad.

1. We've heard of "Songs of Araby"
And tales of "Fair Cashmere;"
We've often heard of 'Cakes and Ale,'
(For rhyme's sake, I'll say Beer;
But all the 'trav'lers tales' of old
Are simply flat and tame,
Compared with things that happened here
Before we came.

ADVERTISEMENTS.

2. In those exciting, stirring days
Folks lived quite in a whizz;
Festivities were frequent,
(And nothing drank but "Fizz");
Alas! those days are over quite,
But yet we, all the same,
Regret that they were quite played out
Before we came.

3. In those fine times, 'Before we came,'
In those gay days of yore;
They boasted quite a gallant 'corps,'
Full forty men and more;
Those warlike officers and men
Were up to any game;
They entertained their friends right well
Before we came.

4. They sat around with faces blacked
With bones and tambourines,
They sang some very funny songs
And sent us into 'screams';
'Twas quite a sight to see them drill;
They'd march till they fell lame;
But there they were disbanded long
Before we came.

5. The race-course—now half overgrown—
Saw many a festive scene.
The merry planters gathered thick
To gallop on the green!
Perhaps the *Asian* did not mention
Any horse's name,
But many a steeplechase they ran
Before we came.

6. And then, besides, they had a Club;
They'd many a ball and rout;
You'd find men down there any night
Knocking the balls about!
In fancy dress, a Minuet,
Walked many a 'Squire' and 'Dame';
They made out quite a "Week" of it
Before we came.

7. 'Tis sad that since we ventured out
To India's sunny shore,
They've given up all these jolly things
And not had any more.
The weather's been 'abnormal' quite,
Let's hope it won't remain;
We had an awful time of it
After we came.

8. Monsoon (96) was something terrible
With cyclones *two* thrown in;
It really made you feel that "language"
Wasn't any sin!
But this year let us hope we'll not
Have had abnormal rain,
And that there'll be more "go" in all things
Since we came.
"IBEX."

CENTRAL HOTEL, INFANTRY ROAD, BANGALORE.

(Under English Management.)

The most comfortable and convenient for visitors.

TERMS MODERATE.

"Englishman," August 1st, 1896.

APPRECIATION OF AN INDIAN MIXTURE.

Messrs. CHILD & CO.,

The Wholesale Tobacconists of Chowringhee, are in possession of
an autograph letter from Mark Twain.

"Indian Daily News," August 1st, 1896.

Mark Twain left a substantial memento of his visit behind
him in Calcutta in the shape of a letter addressed to Messrs.
Child & Co., and an old Mississippi pilot knows what good
tobacco is, even when he takes to literature.

MARK TWAIN.

Calcutta, February 8th, 1896.

MESSRS. CHILD & CO.

SIRS,—This is the brand I wanted. I have smoked your
Honey Dew Mixed in another part of the world, and learned to
prefer it.

Truly yours,
S. L. CLEMENS.

CHILD & CO.'S HONEY DEW MIXTURE

Is prepared from the four finest growths in the
world, viz. :—

Sun-dried Virginia (sweet and mellow), Old Kentucky (full
flavoured), Turkey Dubec (mild), Latakia (fragrant). All finely
matured in bond, and judiciously blended.

It is a faultless Pipe Tobacco, being of medium strength,

WITH DELICIOUS FLAVOUR.

THE FINEST THAT CAN BE MADE. NO EQUAL.

In $\frac{1}{4}$ lb. air-tight tins, Rs. 2-8 per lb.

CHILD & CO.,

WHOLESALE AND RETAIL TOBACCONISTS,

MESS AND CLUB CONTRACTORS,

2-22, 2-23, CHOWRINGHEE ROAD, CALCUTTA.

GENERAL PRICE LIST ON APPLICATION.

MARKET SUPPLEMENT.

SATURDAY, DECEMBER 25, 1897.

COFFEE.

Messrs. Wm. Jas. and Hy. Thompson's Report of the Colonial Markets for the Week ending December 1st, 1897, says:—Bank rate 3%. Bombay Exchange closes at 1s 3 $\frac{1}{4}$ d. Brazil Exchange 7 $\frac{3}{4}$ d. Rupee paper 3 $\frac{1}{2}$ % 62 $\frac{1}{2}$. Silver 27 $\frac{1}{2}$ d per oz.

A slightly better tone has prevailed in this article, and occasionally steadier prices have been realized for the better qualities. The market, however, continues flat for all medium and ordinary kinds, and the bulk of the supplies at auctions have again been withdrawn. Brazil markets are steadier, owing to smaller receipts and a slightly firmer cost and freight demand.

Daily receipts averaged 13,200 bags in Rio, and 15,200 bags in Santos. Futures have been more active, and a recovery has taken place, closing prices shewing an advance of 2s to 3s 3d per cwt., viz.:—Good average Santos in Havre, March delivery, fcs. 37.25, in Hamburg pf. 31, and No. 7 low ordinary Rio in New York \$5.85.

To-day's London official quotations are:—

	Dec.	March	May	July	Sept.
SANTOS	30/3	30/9	31/3	31/6	31/9
We quote:—					
Ceylon, mid. to good mid.	95/	@100/	Costa Rica, mid. to fine...	77/	@108/
Do. small to low mid.	75/	93/	Do. ord. to low middling.	54/	76/
East India, mid. to good			Jamaica, good to fine ord.	49/	60/
mid...	86/	97/	Do. greenish to fine		
Do. small to low mid.	68/	85/	colory...	70/	125/
Guatemala, mid. to fine...	75/	100/	African	27/	28/
Do. good ord. to low			Columbian, ordinary	35/	43/
mid...	55/	74/	Do. good ord. to		
Salvador, good ord. foxy			low mid...	45/	70/
greenish...	50/	51/	Do. mid. to fine...	72/	96/

AT THE FALL OF THE LEAF.

WHY do the leaves fall? "Bless me, I don't know," you answer: "I suppose because it is one of nature's arrangements."

Precisely; but why did nature so arrange? Why not have summer time always, with perpetual foliage? What is the meaning of denuded branches, withered flowers, daylight fading in mid-afternoon, and winter's cold and desolation? When you find out why the leaves fall, you will have discovered one of nature's deepest secrets—*why men die.*

Suppose we try an easier problem. Why should Mr. William Steel have written such a sentence as this?—"At the fall of the leaf every year I got into such a state that I took no pleasure in anything."

No doubt there are minds so highly strung as to feel keenly the influence of outward conditions, changes of the weather and of the seasons, and so on. But they are rare, and for practical purposes they ought to be rare. Our friend Mr. Steel, happily for him, was not one of them. All the same he was a miserable man every time the leaves began to rattle to the ground.

Here's the way he puts it: "At the fall of the leaf every year I felt languid, tired and weary, and took no pleasure in anything. My appetite was poor, and after everything I ate I had pain and fullness at the chest and sides. Then there was a horrible pain at the pit of the stomach, which nothing relieved."

Now this sort of thing would spoil a man's pleasure any time of year, but the oddity in Mr. Steel's case is that it always coincided with what you may call nature's bedtime.

"After a few months," he says, "the pain and distress would be easier for a while, but as autumn approached I became as bad as ever."

Receipts in Brazil to 1st Dec. compare as follows with previous years

	1897-98.	1896-97.	1895-96.
	Bags.	Bags.	Bags.
RIO	2,358,000	1,863,000	1,332,000
SANTOS	3,972,000	3,179,000	2,074,000
	6,330,000	5,042,000	3,406,000

Auctions:—

27 casks and tierces 3 barrels Plantation Ceylon,			
part sold ...	@ 96/	@	
49 barrels Jamaica bought in.			
5,238 bags Columbian, part sold	38/	102	
350 bags Salvador bought in.			
362 bags Guayaquil, part sold	35/6	43/	
260 bags Peruvian, small part sold	40/6		
131 bags Mexican, small part sold	41/		
165 packages Mocha bought in.			
102 bags Guatemala bought in.			
813 bags Nyassaland	43/	85/	
281 bags Costa Rica bought in.			
95 bags Java bought in.			
25 bags Bolivian bought in.			
37 bags Penang Liberian	31/6	33/	
4 bags Seychelles Liberian bought in.			
5 bags Liberian bought in.			
2 bags Fiji	46/		

On Quay Terms:—

96 bags Rio bought in.			
465 bags Santos bought in.			
250 bags washed Santos bought in.			
Landed last week ...	486 tons.	Deliveries ...	479 tons.
Do. last year ...	573 "	"	519 "
		Stock ...	10,045 tons
		"	7,983 "

In September 1890, I had an unusually bad time of it. I couldn't touch a morsel of food, and presently got so weak I was unable to stand on my legs. Every few hours I had to be poulticed, the pain was so bad. I went to bed and stayed there for a week, with a doctor attending me. He relieved me a little, but somehow he didn't succeed in getting to the bottom of my ailment."

That may be, but it doesn't quite follow that the doctor was in the dark as to Mr. Steel's ailment. He might have understood it right enough, yet failed to cure it because he had no remedy for it among his drugs. That happens all the while. Still, the reader may ask: What's the good of knowing the nature of a complaint if we possess no medicine to cure it? There you have us; no use at all, to be sure.

Well, Mr. Steel goes on to say: "For some time I continued very feeble, and was hardly able to walk across the floor. If I took a short walk I felt so tired and done up I didn't know where to put myself. This was year after year for six years."

"Finally I read about the popular medicine called Mother Seigel's Curative Syrup, and made up my mind to try it. So I began and kept on with it for some time. The result was that the pain left me, and my appetite waked up, and my food tasted good and digested well; and presently I was strong and hearty as ever. That was three years ago, and the trouble has never returned. (Signed) William Steel, Hambleton, near Oakham, Rutlandshire, Dec. 5th 1893."

Mr. Steel is grocer and postmaster at Hambleton, and his case is well known there. His complaint isn't hard to see through; it was indigestion and dyspepsia. But why did it come on only in the autumn? What had the fall of the leaf to do with it? Let the reader study on that point.

Meanwhile it is a comfort to know that Mother Seigel's Syrup will cure it, no matter when it comes on.

